

SECRETARY OF STATE  
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**NOTICE OF PUBLIC INFORMATION**  
**DEPARTMENT OF ENVIRONMENTAL QUALITY**

**FILED**

1. **Title and its heading:** 49. The Environment

**Chapter and its heading:** 2. Water Quality Control

**Article and its heading:** 2.1. Total Maximum Daily Loads

**Section:** A.R.S. § 49-232. Lists of Impaired Waters; Data Requirements; Rules

2. **The public information relating to the listed Statute:**

Arizona Revised Statutes (A.R.S.) § 49-232(A) requires the Arizona Department of Environmental Quality (ADEQ) to at least once every five years, prepare a list of impaired waters for the purpose of complying with section 303(d) of the Clean Water Act (33 U.S.C. 1313(d)). The Department shall provide public notice and allow for comment on a draft list of impaired waters prior to its submission to the United States Environmental Protection Agency (EPA). The Department shall prepare written responses to comments received on the draft list. The Department shall publish the list of impaired waters that it plans to submit initially to the regional administrator and a summary of the responses to comments on the draft list in the *Arizona Administrative Register* at least 45 days before submission of the list to the regional administrator.

3. **The Clean Water Act and the 2004 303(d) List**

The Clean Water Act was established to restore and maintain the chemical, physical, and biological integrity of the nation's waters to, wherever attainable, provide for the protection and propagation of fish, shellfish, and wildlife; for recreation in and on the nation's waters; and for the development and implementation of programs to control nonpoint sources of pollution. This is commonly referred to as the "fishable, swimmable" goal of the Clean Water Act.

Section 305(b) of the Clean Water Act requires states to prepare and submit to EPA a biennial report that describes the water quality of all surface waters in the state. Each state must monitor water quality and review available data and information from various sources to determine if water quality standards are being met. From this 305(b) Report and other sources of information, the 303(d) List is created. This list identifies those streams that do not meet one or more of its designated uses. These waters are known as "water quality limited segments" or "impaired waters." Identifying a surface water as impaired may be based on an evaluation of physical, chemical, or biological data demonstrating evidence of a numeric standard exceedance, a narrative standard exceedance, designated use impairment, or on a declining trend in water quality, such that the surface water would exceed a water quality standard before the next listing period (antidegradation provisions under 40 CFR 130.7(b)(3)).

Section 303(d) of the Clean Water Act requires each state to prepare several lists of surface water segments not meeting surface water quality standards, including those that are not expected to meet state

surface water quality standards after implementation of technology-based controls. The draft list is revised based on public input and finalized for submission to EPA. Arizona, like most states, prepares one list containing all of the waters meeting the criteria in section 303(d). At a minimum, the following sources of data are considered:

- Surface waters identified in the 305(b) Report, including the section 314 lakes assessment, as not meeting water quality standards;
- Surface waters for which dilution calculations or predictive models indicate nonattainment of standards;
- Surface waters for which problems have been reported by other agencies, institutions, and the public;
- Surface waters identified as impaired or threatened in the state's nonpoint assessments submitted to EPA under section 319 of the Clean Water Act;
- Fish consumption advisories and restrictions on water sports and recreational contact;
- Reports of fish kills or abnormalities (cancers, lesions, tumors);
- Water quality management plans;
- The Safe Drinking Water Act section 1453 source water assessments; and
- Superfund and Resource Conservation and Recovery Act (RCRA) reports and the Toxic Release Inventory.

When the 303(d) List and supporting documentation are submitted to EPA for review and approval, the submission constitutes the bulk of the administrative record supporting EPA's approval of the list. The submission contains the 303(d) List, including the pollutants or suspected pollutants impairing water quality; the priorities and the surface waters targeted for Total Maximum Daily Load (TMDL) development during the next listing cycle; a description of the process used to develop the 303(d) List; the basis for listing decisions, including reasons for not including a surface water or segment on the list; and a summary of the response to public comments. Where there are exceedances of standards, 40 CFR 130.7(b)(6)(iv) requires a state to demonstrate "good cause" for not listing a surface water and places the burden of proof on the state to justify excluding a surface water from the list. "Good cause" factors include more recent or accurate data, flaws in the original analysis, more sophisticated water quality modeling, or changes in the conditions that demonstrate that the surface water is no longer impaired.

40 CFR 130.7(c)(1) and A.R.S. § 49-233 require the state to prioritize the identified impaired waters for development of a TMDL for each pollutant. A TMDL is a scientific determination of the maximum amount, or "load," of the specific pollutant that a river, lake, or other surface water can tolerate or assimilate without exceeding surface water quality standards. Once a TMDL is established, that "load" is then allocated between the various identified point and nonpoint sources of that pollutant in the watershed. It is implemented through permitting actions, such as Arizona Pollutant Discharge Elimination System (AZPDES) permits, or through non-regulatory or voluntary efforts for nonpoint source activities.

The 303(d) List is due to be submitted to the U.S. Environmental Protection Agency on or before April 1, 2004. EPA has been informed that the report was delayed due to the release of a second draft report

and associated public comment periods. As noted in 2. above, state statutes require that the initial 303(d) List be published in the *Arizona Administrative Register* at least 45 days before the list is submitted to the Regional Administrator. Below is the list of impaired waters that will be submitted to EPA.

<b>SURFACE WATERS ASSESSED AS IMPAIRED</b> <b>(The 2004 303(d) List submittal to EPA)</b>		
<b>Surface Water</b>	<b>Reach or Lake Number</b>	<b>Pollutants or Parameters of Concern</b>
<b>Bill Williams Watershed</b>		
Alamo Lake	AZL15030204-0040	Mercury in fish tissue (EPA*), pH (high), ammonia
Boulder Creek unnamed wash at 34°41'14"/113°03'34" - Wilder Creek	AZ15030202-006B	Mercury
Boulder Creek Wilder Creek - Copper Creek	AZ15030202-005A	Arsenic, copper, zinc, mercury (Note copper and zinc impairment limited to segment from Wilder to Butte Creek)
Burro Creek Boulder Creek - Black Canyon	AZ15030202-004	Mercury
Butte Creek headwaters - Boulder Creek	AZ15030202-163	Mercury
<b>Colorado - Grand Canyon Watershed</b>		
Colorado River Parashant Canyon - Diamond Creek	AZ15010002-003	Selenium, suspended sediment concentration
Paria River Utah border - Colorado River	AZ14070007-123	Suspended sediment concentration
Virgin River Beaver Dam Wash - Big Bend Wash	AZ15010010-003	Selenium, suspended sediment concentration
<b>Colorado - Lower Gila Watershed</b>		
Colorado River Hoover Dam - Lake Mohave	AZ15030101-015	Selenium
Gila River Coyote Wash - Fortuna Wash	AZ15070201-003	Boron, selenium
Painted Rock Borrow Pit Lake	AZL15070201-1010	DDT metabolites, toxaphene and chlordane in fish tissue (EPA*), dissolved oxygen
<b>Little Colorado - San Juan Watershed</b>		

Lake Mary (lower)	AZL15020015-0890	Mercury in fish tissue (EPA*)
Lake Mary (upper)	AZL15020015-0900	Mercury in fish tissue (EPA*)
Little Colorado River Silver Creek - Carr Wash	AZ15020002-004	<i>Escherichia coli</i>
Little Colorado River Porter Tank Draw - McDonalds Wash	AZ15020008-017	Copper, silver, suspended sediment concentration
<b>Middle Gila Watershed</b>		
Alvord Park Lake	AZL15060106B-0050	Ammonia
Chaparral Lake	AZL15060106B-0300	Dissolved oxygen, <i>Escherichia coli</i>
Cortez Park Lake	AZL15060106B-0410	Dissolved oxygen, pH (high)
French Gulch headwaters - Hassayampa River	AZ15070103-239	Copper, zinc, cadmium
Gila River Salt River - Agua Fria River	AZ15070101-015	DDT metabolites, toxaphene and chlordane in fish tissue (EPA*)
Gila River Agua Fria River - Waterman Wash	AZ15070101-014	DDT metabolites, toxaphene and chlordane in fish tissue (EPA*)
Gila River Waterman Wash - Hassayampa River	AZ15070101-010	DDT metabolites, toxaphene and chlordane in fish tissue (EPA*)
Gila River Hassayampa River - Centennial Wash	AZ15070101-009	DDT metabolites, toxaphene and chlordane in fish tissue (EPA*)
Gila River Centennial Wash - Gillespie Dam	AZ15070101-008	DDT metabolites, toxaphene, and chlordane in fish tissue (EPA*), boron, selenium
Gila River Gillespie Dam - Rainbow Wash	AZ15070101-007	DDT metabolites, toxaphene and chlordane in fish tissue (EPA*)
Gila River Rainbow Wash - Sand Tank	AZ15070101-005	DDT metabolites, toxaphene and chlordane in fish tissue (EPA*)
Gila River Sand Tank - Painted Rocks Reservoir	AZ15070101-001	DDT metabolites, toxaphene and chlordane in fish tissue (EPA*)
Hassayampa River Buckeye Canal - Gila River	AZ15070103-001B	DDT metabolites, toxaphene and chlordane in fish tissue (EPA*)
Mineral Creek Devils Canyon - Gila River	AZ15050100-012B	Copper, selenium
Painted Rocks Reservoir	AZL15070101-1020A	DDT metabolites, toxaphene and chlordane in fish tissue (EPA*)
Queen Creek headwaters - Superior Mine WWTP	AZ15050100-014A	Copper

Queen Creek Superior Mine WWTP - Potts Canyon	AZ15050100-014B	Copper
Salt River 23 <sup>rd</sup> Ave WWTP - Gila River	AZ15060106B-001D	DDT metabolites, toxaphene and chlordane in fish tissue (EPA*)
Turkey Creek unnamed tributary at 34°19'28"/112°21'28" - Poland Creek	AZ15070102-036B	Cadmium, copper, zinc, lead
<b>Salt River Watershed</b>		
Canyon Lake	AZL15060106A-0250	Dissolved oxygen
Christopher Creek headwaters - Tonto Creek	AZ15060105-353	<i>Escherichia coli</i>
Crescent Lake	AZL15060101-0420	pH (high, EPA*)
Pinto Creek Ripper Spring - Roosevelt Lake	AZ15060103-018C	Selenium, copper
Salt River Stewart Mountain Dam - Verde River	AZ15060106A-003	Dissolved oxygen, copper
<b>San Pedro – Willcox Playa – Rio Yaqui Watershed</b>		
Mule Gulch headwaters - above Lavender Pit	AZ15080301-090A	Copper
Mule Gulch above Lavender Pit - Bisbee WWTP	AZ15080301-090B	Copper, pH (low, EPA*)
Mule Gulch Bisbee WWTP - Highway 80 Bridge	AZ15080301-090C	Copper, zinc, pH (low), cadmium
San Pedro River Mexico border - Charleston	AZ15050202-008	Copper
San Pedro River Babocomari Creek - Dragoon Wash	AZ15050202-003	<i>Escherichia coli</i>
San Pedro River Dragoon Wash - Tres Alamos Wash	AZ15050202-002	Nitrate
San Pedro River Aravaipa Creek - Gila River	AZ15050203-001	<i>Escherichia coli</i> , selenium
<b>Santa Cruz – Rio Magdalena – Rio Sonoyta Watershed</b>		
Cienega Creek headwaters - Gardner Canyon	AZ15050302-006A	<i>Escherichia coli</i>
Lakeside Lake	AZL15050302-0760	Dissolved oxygen, ammonia

Nogales and East Nogales washes Mexico border - Potrero Creek	AZ15050301-011	Chlorine, <i>Escherichia coli</i> , ammonia, copper
Santa Cruz River Mexico border - Nogales WWTP	AZ15050301-010	<i>Escherichia coli</i>
Sonoita Creek 750 feet below WWTP - Santa Cruz River	AZ15050301-013C	Zinc
<b>Upper Gila Watershed</b>		
Cave Creek headwaters - South Fork of Cave Creek	AZ15040006-852A	Selenium
Gila River Skully Creek - San Francisco River	AZ15040002-001	Selenium
Gila River Bonita Creek - Yuma Wash	AZ15040005-022	<i>Escherichia coli</i>
<b>Verde Watershed</b>		
East Verde River Ellison Creek - American Gulch	AZ15060203-022B	Selenium
Verde River Bartlett Dam - Camp Creek	AZ15060203-004	Selenium, copper
Whitehorse Lake	AZ15060202-1630	Dissolved oxygen (EPA*)

\*Indicates that EPA placed the pollutant or parameter on the 2002 303(d) List, rather than ADEQ. The pollutant has remained on the 303(d) List for 2004.

2004 TMDL PRIORITIZATION AND SCHEDULE					
(Key to priority letter codes can be found following the table)					
Surface Water Identification	Pollutant	Year first listed	Comments	Ranking	Time Table **
<b>Bill Williams Watershed</b>					

Alamo Lake 1,414 acres AZL1503020 4-0040	Mercury (in fish tissue)	1998 (2002 EPA)	Excess mercury in fish tissue can be toxic to humans and other animals that eat the fish (H1). Fish in this lake are a food source for the bald eagle (a species federally-listed as Threatened) (H4) and the lake supports significant sport fishing (H7). ADEQ will be coordinating research for potential mercury sources for the five mercury listings in this watershed as they may have common sources (M5, M6). Currently there is insufficient data to determine sources or critical conditions (L6).	High	Initiated monitoring and investigation in 2003. Initiate TMDL in 2004. Complete TMDL in 2005.
	Ammonia	2004	ADEQ is currently establishing criteria to classify its lakes, which may result in changes in assessment status (M6). Classification is to be completed by 2004. High ammonia and pH levels may indicate eutrophication problems that may lead to fish kills at this popular fishing area (H7). The bald eagles located near this lake (a species that is federally-listed as Threatened) should <u>not</u> be negatively impacted by the elevated ammonia and pH. More investigation is needed to determine the source of the pollutants (L6). Although ammonia could pose a significant threat to aquatic life due to its toxic nature, the chronic ammonia standard was exceeded in only 2 of 36 sampling events. The pH level exceeds standard for A&Ww, FBC, and AgL (M1).	Medium	Ongoing monitoring by US Fish and Wildlife Service. Initiate monitoring and investigation in 2007. Initiate TMDL in 2008. Complete TMDL in 2009.
	pH	1996			
Boulder Creek Unnamed tributary at 34°41'14"/113°03'34" - Wilder Creek 29 miles AZ15030202-006B	Mercury	2004	The mercury presents a significant threat to aquatic life and animals that prey on these species (including humans). Dissolved mercury concentration was as high as 3.4 ug/L, which is 340 times the chronic standard, and almost 6 times the Fish Consumption standard (H1). Boulder Creek drains to Burro Creek and Alamo Lake, which are also on the 303(d) List for mercury. ADEQ will be coordinating research for potential	High	Initiated monitoring and investigation in 2004. Initiate TMDL in 2005. Complete TMDL in 2006.

			mercury sources for the five mercury listings in this watershed as they may have common sources (M5, M6). Collecting adequate data for source loadings has been slowed by intermittent flows and drought conditions (L6).		
Boulder Creek Wilder Creek - Copper Creek 3 miles AZ15030202- 005A	Arsenic, Copper, Zinc	1988	<p>Copper and zinc present a significant threat to wildlife due to the toxic nature of these pollutants and the magnitude of the exceedances as follows:</p> <ul style="list-style-type: none"> <li>* Dissolved copper results as high as 14,400 µg/L, which is 220 times higher than the standard (H1);</li> <li>* Dissolved zinc results as high as 115,000 µg/L, which is 300 times higher than the standard (H1).</li> </ul> <p>Arsenic poses a low human-health threat on this remote intermittent stream that has nominal recreation (L5) (L4). Development of a TMDL has been complex due to intermittent flow, source determination, and correlation of exceedances with storm water runoff (M3, M5, L6 ). A TMDL has been completed and will be submitted to EPA for approval in 2004 (M6). BLM, Arizona State Land Dept, and private landowners are coordinating efforts to clean up contaminated sites. (Note: Investigations indicate that arsenic impairs the entire reach, while copper and zinc impair the segment between Wilder Creek and Butte Creek, which is below the lower tailings pile.)</p>	High	Arsenic, copper and zinc TMDLs are complete and are to be submitted to EPA for approval in 2004.

	Mercury	2004	<p>The mercury presents a significant threat to aquatic life and animals that prey on these species (including humans) (H1). Dissolved mercury concentration was as high as 3.8 ug/L, which is 380 times the chronic standard, and six times the Fish Consumption standard (H1). Boulder Creek drains to Burro Creek and Alamo Lake, which are also on the 303(d) List for mercury. ADEQ will be coordinating research for potential mercury sources for the five mercury listings in this watershed as they may have common sources (M5, M6). Intermittent stream flow has slowed collection of adequate data to determine source loadings (L6).</p>	High	<p>Initiated monitoring and investigation in 2004.</p> <p>Initiate TMDL in 2005.</p> <p>Complete TMDL in 2006</p>
<p>Burro Creek Boulder Creek - Black Canyon 17 miles AZ15030202- 004</p>	Mercury	2004	<p>The mercury presents a significant threat to aquatic life and animals that prey on these species (including humans)(H1). Dissolved mercury concentration was as high as 0.8 ug/L, which is 80 times the chronic standard (H1). Burro Creek drains to Alamo Lake, which is also on the 303(d) List for mercury. ADEQ will be coordinating research for potential mercury sources for the five mercury listings in this watershed as they may have common sources (M5, M6). Currently there is insufficient data to determine sources or critical conditions (L6).</p>	High	<p>Initiated monitoring and investigation in 2004.</p> <p>Initiate TMDL in 2005.</p> <p>Complete TMDL in 2006.</p>
<p>Butte Creek headwaters - Boulder Creek 3 miles AZ15030202- 163</p>	Mercury	2004	<p>The mercury presents a significant threat to aquatic life and animals that prey on these species (including humans)(H1). Dissolved mercury concentration was as high as 1.0 ug/L, which is 100 times the chronic standard (H1). Butte Creek drains to Boulder Creek, Burro Creek, and eventually Alamo Lake, all of which are also on the 303(d) List for mercury. ADEQ will be coordinating research for potential mercury sources for the five mercury listings in this watershed as they may have common</p>	High	<p>Initiated monitoring and investigation in 2004. Initiate TMDL in 2005.</p> <p>Complete TMDL in 2006.</p>

			sources (M5, M6). Intermittent stream flow and drought conditions have slowed collection of adequate data to determine source loadings (L6).		
<b>Colorado-Grand Canyon Watershed</b>					
Colorado River Parashant Canyon - Diamond Creek 28 miles AZ15010002-003	Selenium	2004	Prior monitoring and investigations should help support TMDL development; however, further investigation is needed to determine source loadings, especially contributions from natural background (L6, L8). Source contributions from Utah, Colorado, and other upstream states may make completion of this TMDL more complex (M5). The humpback chub and razorback sucker, two federally protected species that occur in this area, should <u>not</u> be negatively impacted by the suspended sediment or relatively low levels of selenium.	Low	Ongoing fixed station monitoring by USGS.  Initiate monitoring and investigation in 2010. Initiate TMDL in 2011. Complete TMDL in 2012.
	Suspended sediment concentration	2004		Low	
Paria River Utah border - Colorado River 29 miles AZ14070007-123	Suspended sediment concentration	2004	Prior monitoring and investigations in this drainage should help support TMDL development (M6); however, further investigation is needed to determine source loadings, especially contributions from natural background (L6, L8). Source contributions from Utah may make completion of this TMDL more complex (M5).	Low	Initiate monitoring and investigation in 2010. Initiate TMDL in 2011. Complete TMDL in 2012.
Virgin River	Selenium	2004	Prior monitoring in this drainage should help	Medium	Ongoing fixed

Beaver Dam Wash - Big Bend Wash 10 miles AZ15010010-003	Suspended sediment concentration	2004	support TMDL development (M6); however, further investigation is needed to determine source loadings, especially contributions from natural background (L6, L8). Source contributions from Utah may make completion of this TMDL more complex (M5). The federally protected Virgin River chub and woundfin that occur in this area, should <u>not</u> be negatively impacted by the elevated selenium and suspended sediment concentrations. For efficiency, the development of selenium TMDLs in the Colorado River and the Virgin River will be coordinated (M6).	Medium	station monitoring by USGS. Initiate monitoring and investigation in 2009. Initiate TMDL in 2010. Complete TMDL in 2011.
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**Colorado-Lower Gila Watershed**

Colorado River Hoover Dam - Lake Mohave 40 miles AZ15030101-015	Selenium	2004	The federally protected Yuma clapper rail that occur in this area could be negatively impacted by elevated lead or selenium (H4). Prior monitoring in this drainage should help support TMDL development (M6); however, further investigation is needed to determine source loadings, especially contributions from natural background (L6, L8). Note that significant selenium loadings may be contributed from upstream sources in Utah and Colorado and may make completion of the TMDL more complex (M5).	High	Ongoing fixed station monitoring by USGS. Initiate monitoring and investigation in 2009. Initiate TMDL in 2010. Complete TMDL in 2011.
Gila River Coyote Wash -	Boron	2004	The federally protected Yuma clapper rail have been found in this surface water and could be	High	Ongoing fixed station monitoring.

Fortuna Wash 28 miles AZ15070201-003	Selenium	2004	negatively impacted by elevated selenium (H4). Elevated selenium and boron may be associated with the extensive agriculture in the area; however, TMDL may be complex due to large number of potential sources and potential seasonal influences (M3, M5, L6). Boron concentrations found may impact downstream agricultural uses (H7) but present a low ecological and human health risk (L5). Coordinate TMDL investigations with boron and selenium investigation upstream, from Centennial Wash to Gillespie Dam (M6).		Initiate monitoring and investigation in 2006. Initiate TMDLs in 2007. Complete TMDLs in 2008.
Painted Rocks Borrow Pit Lake 180 acres AZL15070201-1010	Low dissolved oxygen	1992	A 1992 diagnostic feasibility study by ADEQ suggested the causes of low dissolved oxygen were due to design and maintenance problems on this shallow lake and suggested strategies to improve water quality. Drought conditions have reduced lake levels and may be related to some of the low dissolved oxygen readings (L8). During the past year, the lake has been dry and representative water samples at the lake could not be collected (L4). The lake is no longer being stocked with fish and does not have recreational uses because of historic pesticide contamination and fish consumption advisories (L5).	Low	Lakes classification study will be completed in 2004 and will determine need for TMDL.

	DDT metabolites, toxaphene, chlordane in fish tissue	1988 (EPA 2002)	The federally protected Yuma clapper rail occurs in this area and could be negatively impacted by pesticides (H4). There is no public access, thus the public health risk due to fish tissue contamination is significantly reduced; however, these pesticides still present a high risk to aquatic life and species that prey on them (H1). The TMDLs will be complex due to the size of the drainage and potential sources (M5) and will require significant monitoring resources to determine the sources of this historic pesticide (L6). TMDLs will be coordinated with related pesticide TMDLs in the Middle Gila (M6).	High	Initiate monitoring and investigation in 2008. Initiate TMDLs in 2009. Complete TMDLs in 2010.
<b>Little Colorado-San Juan Watershed</b>					
Little Colorado River Silver Creek - Carr Wash 6 miles AZ15020002-004	<i>Escherichia coli</i>	2004	Exceedances of the <i>Escherichia coli</i> standard may represent a significant public health concern if people are swimming or even wading in the water (H1). Exceedances may be related to wet weather events (M3). The drainage area is more than 8,000 square miles so determining the source of contamination may be complex and will require substantial monitoring data to identify sources (M5, L6). ADEQ will initiate this monitoring while it collects data for other TMDLs along the Little Colorado River (M6).	Medium	Initiate monitoring and investigation in 2005. Initiate TMDL in 2006. Complete TMDL in 2007.
Little Colorado River Porter Tank Draw - McDonalds Wash 17 miles	Copper, silver	1992	Copper and silver TMDLs are a high priority due to the toxic nature of these heavy metals and the frequency of exceedances (9 out of 11 samples exceeded the copper standard, and 2 out of 9 samples exceeded the silver standard) (H1). The Little Colorado spinedace, which is federally protected as a Threatened species,	High	Initiate monitoring and investigation in 2005. Initiate TMDL in 2007. Complete TMDL in 2009.

AZ15020008-017	Suspended sediment concentration	2004	occurs in this reach and may be negatively impacted by the copper and silver (H4), but should <u>not</u> be negatively impacted by the suspended sediment concentration. Data from a USGS study concluded that the metals may be naturally elevated (L8); however, sources and natural loading concentrations need to be further studied (L6). The nature of these pollutants makes this study very complex (M5). The current sampling plan for copper and silver will be updated to include SSC.	Medium	Initiate monitoring and investigation in 2005. Initiate TMDL in 2007. Complete TMDL in 2009.
Lake Mary (lower) 660 acres AZL15020015-0890  Lake Mary (upper) 760 acres AZL15020015-0900	Mercury (in fish tissue)	2002 (EPA)	Fish consumption advisory has been issued. Excess mercury in fish tissue can be toxic to humans and other animals that eat the fish (H1). Normally the lake is a significant public recreational area (H7); however, due to a long drought, the lake has been dry at times during the past year. Intermittent stream flow and drought conditions have slowed collection of adequate data to determine source loadings (L6). Excessive mercury in fish tissue has been found in numerous regional lakes. Because the extent of impairment and sources of loading have not been determined, and may have natural and/or airborne sources, this TMDL is complex and a high priority (M5, M6, L8).	High	ADEQ initiated TMDL monitoring and investigation in 2003. Initiate TMDL in 2005. Complete TMDL in 2006.
<b>Middle Gila Watershed</b>					
Alvord Park Lake 27 acres AZL15060106B-0050	Ammonia	2004	Ammonia poses a significant threat to aquatic life due to its toxic nature (H1). This lake is an important urban recreational area (H7). More investigation is needed to determine the source of the pollutants (L6). ADEQ is currently establishing criteria to classify its lakes, which may result in changes in assessment status (M6).	High	Initiate monitoring and investigation in 2007. Initiate TMDL in 2008. Complete TMDL in 2009.

Chaparral Lake 13 acres AZL15060106B -0300	Low dissolved oxygen, <i>Escherichia coli</i>	2004	Although exceedances of <i>Escherichia coli</i> standards represent a risk to public health, swimming or wading in the lake is prohibited. Low dissolved oxygen, which may result in fish kills, would be detrimental to this important urban recreational area (H7). More investigation is needed to identify the sources loadings (L6). Both TMDLs in this lake will be developed at the same time for efficiency (M6). ADEQ is currently establishing criteria to classify its lakes, which may result in changes in assessment status (M6).	Medium	Initiate monitoring and investigations in 2007. Initiate TMDLs in 2008. Complete TMDLs in 2009.
Cortez Park Lake 2 acres AZL15060106B -0410	Low dissolved oxygen, pH	2004	ADEQ is currently establishing criteria to classify its lakes, which may result in changes in assessment status (M6). For efficiency, Both TMDLs will be developed at the same time (M6). Low dissolved oxygen, which may result in fish kills, would be detrimental to this important urban recreational area (H7). More investigation is needed to identify the sources of pollutants causing these water quality problems (L6).	Medium	Initiate monitoring and investigations in 2007. Initiate TMDLs in 2008. Complete TMDLs in 2009.
French Gulch headwaters- Hassayampa	Copper, zinc	1994	Although this reach is intermittent, the toxic nature of copper and zinc, along with the magnitude and duration of exceedances, pose a	High	TMDL study ongoing. Completion TMDL

River 10 miles AZ15070103- 239	Cadmium	2004	<p>significant threat to wildlife which may drink pools remaining after monsoon rains or winter storms (H1):</p> <p>* Dissolved copper was measured as high as 1200 µg/L (almost 20 times the aquatic and wildlife standard), and exceeded the standards in 80 of 135 samples (60%);</p> <p>* Dissolved zinc was measured as high as 2260 µg/L (almost 6 times the aquatic and wildlife standard), and exceeded standards in 36 of 170 samples (20%).</p> <p>Although the cadmium can be a significant threat to aquatic and wildlife uses, the chronic standard was only exceeded on this intermittent reach in only 3 of 50 sampling events (L4). For efficiency, all three TMDLs will be developed at the same time and a scheduled for 2003-2004 (M6); however, the TMDL is expected to be very complex due to the nature of the pollutants (M5) and seasonal variation (M3). Intermittent stream flow and drought conditions will slow collection of adequate data to determine source loadings (L6).</p>	Medium	in 2004.
Gila River Centennial Wash-Gillespie Dam 5 miles AZ15070101- 008	Boron	1992	<p>The federally protected Yuma clapper rail and Southwest willow flycatcher have been found in this surface water and could be negatively impacted by elevated selenium (H4). Elevated selenium and boron may be associated with the extensive agriculture in the area; however, TMDL may be complex due to large number of potential sources and potential seasonal influences (M3, M5, L6). Boron concentrations found may impact downstream agricultural uses (H7) but present a low ecological and human health risk (L5). Coordinate TMDL investigations with boron and selenium investigation downstream, from Coyote Wash to Fortuna Wash (M6).</p>	Medium	Initiate monitoring and investigation in 2006.
	Selenium	2004		High	Initiate TMDL in 2007. Complete TMDL in 2008.

<b>A. Gila River</b>	DDT	1988	These pesticides still present a high risk to	High	Initiate monitoring
1. Salt River -	metabolites,	(EPA	aquatic life and species that prey on them (H1).		and investigations
Agua Fria River	toxaphene,	2002)	The federally protected Yuma clapper rail and		in 2008.
AZ15070101-	chlordane		Southwest willow flycatchers sighted in this		Initiate TMDLs in
015	in fish		area could be negatively impacted by the		2009.
2. Agua Fria	tissue		pesticides (H4). This will be a very complex		Complete TMDLs
River -			TMDL due to the size of the drainage and		in 2010.
Waterman Wash			potential sources (M5). The TMDL will require		
AZ15070101-			significant monitoring resources to determine		
014			the sources of this historic pesticide (L6).		
3. Waterman					
Wash -					
Hassayampa					
River					
AZ15070101-					
010					
4. Hassayampa					
River -					
Centennial					
Wash					
AZ15070101-					
009					
5. Centennial					
Wash - Gillespie					
Dam					
AZ15070101-					
008					
6. Gillespie					
Dam - Rainbow					
Wash					
AZ15070101-					
007					
7. Rainbow					
Wash - Sand					
Tank					
AZ15070101-					
005					
8. Sand Tank -					

Painted Rocks Reservoir <u>B. Painted  Rocks  Reservoir</u> AZL15070101- 1020A <u>C. Painted  Rocks Borrow  Pit Lake - See  Colorado-  Lower Gila  Watershed)</u> <u>D. Salt River</u> 23 <sup>rd</sup> Ave WWTP - Gila River AZ15060106B- 001D <u>E. Hassayampa  River</u> Buckeye Canal - Gila River AZ15070103- 001B Total 99 miles and 100 acres					
Mineral Creek Devils Canyon-	Copper	1992	The federally protected Southwest willow flycatcher found in this area could be negatively	Low	Initiate monitoring and investigations

Gila River 10 miles AZ15050100-012B	Selenium	2004	impacted by selenium. (H4). The copper poses some risk to public health and wildlife due to its toxicity (H1); however, based on a consent decree actions have been taken and have been generally successful at mitigating the copper contamination (M4)(L3). The mine monitors multiple sites on a monthly basis to evaluate the effectiveness of its actions. Further enforcement actions will be taken if compliance is not attained per consent decree by April 2004 (L3). Copper exceedances after treatment were related to storm flow (M3), and determining the source of copper during such storm flows may be complex due to historic mining and natural sources (M5). Intermittent stream flow and drought conditions have slowed collection of adequate data to determine source loadings (L6).	High	in 2006. Initiate TMDLs in 2008. Complete TMDLs in 2009.  (Surface water to be in compliance with copper standards by April 2004 according to the signed consent decree.)
Queen Creek 1. headwaters-Superior Mine WWTP 9 miles AZ15050100-014A  2. Superior Mine WWTP - Potts Canyon AZ15050100-014B	Copper	2002 (reach A)  2004 (reach B)	A copper TMDL will be complex (M5) due to intermittent flows (L4), the nature of the pollutant (M5) and the probability that contamination is related to storm water runoff events (M3). More samples are needed to identify sources and evaluate the extent of contamination (L6). Although copper is toxic to aquatic life and wildlife, the copper listings are based on only two exceedances in nine samples and exceedances are just above standards; therefore, copper <u>not</u> a high risk to aquatic life and wildlife.	Medium	Initiate monitoring and investigation in 2004. Initiate TMDL in 2005. Complete TMDL in 2006.
Turkey Creek unnamed tributary at 34°19'28"/112	Cadmium	1992	Cadmium, copper, and zinc pose a significant threat to wildlife due to the toxic nature of these pollutants, and the magnitude and frequency of exceedances as follows (H1):	High	TMDL study ongoing. Anticipate completing
	Copper	1992			
	Lead	2004			

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□21'28" - Poland Creek 30 miles AZ15070102- 036	Zinc	1992	<p>* Dissolved cadmium was measured as high as 931 µg/L (8 times the standard), and exceeded standards in 2 of 5 samples (40%);</p> <p>* Dissolved copper was measured as high as 13,600 µg/L (200 times the standard) and exceeded standards in 3 of 5 samples (60%);</p> <p>* Dissolved zinc was measured as high as 158,000 µg/L (more than 400 times the standard) and exceeded standards in 3 out of 5 samples.</p> <p>Although chronic lead can be a significant threat to aquatic and wildlife, the chronic standard was only exceeded in 2 of 7 samples and at relatively low concentrations on this intermittent reach (L4).</p> <p>The federally protected Gila topminnow occurs in this reach and could be negatively impacted by elevated metals in the water (H4). The Forest Service is supporting the development of this TMDL and is developing plans to remediate mine waste piles along this reach (H6, M4). The TMDL investigation is on ADEQ's 2003-2004 work plan (M6) but is complex due to the nature of metals and the length of the listed stream segment (21 miles). Metal contamination may be localized Exceedances are storm dependent. (M3, M5). Intermittent stream flow and drought conditions have slowed collection of adequate data to determine source loadings (L6).</p>		TMDLs in 2004.
<b>Salt Watershed</b>					
Canyon Lake 450 acres AZL15060106A -0250	Low dissolved oxygen	2004	<p>This lake is an important recreational area (H7). Low dissolved oxygen may be related to seasonal activities (M3). More data are needed to identify sources (L6). ADEQ is currently establishing criteria to classify its lakes, which may result in changes in assessment status (M6).</p>	Medium	<p>Initiate monitoring and investigation in 2007.</p> <p>Initiate TMDL in 2008.</p> <p>Complete TMDL in 2009.</p>

Christopher Creek headwaters- Tonto Creek 8 miles AZ15060105-353	<i>Escherichia coli</i>	2004	Exceedances of the <i>Escherichia coli</i> standard indicate a risk to public health (H1). Portions of this stream receive extensive recreational use (H7). Exceedances appear to be seasonal (M3), but more data are needed to identify sources (L6). TMDL is being completed in conjunction with Tonto Creek TMDLs (M6).	High	Ongoing TMDL investigation. TMDL to be completed in 2004.
Crescent Lake 157 acres AZL15060101-0420	pH	2002	ADEQ is currently establishing criteria to classify its lakes, which may result in changes in assessment status (M6). This lake is an important fishing area and high pH levels may be associated with fish kills (last reported fish kill was in 1998) (H7). More monitoring data are needed to identify pollutants causing the high pH and sources of the pollutants (L6).	Medium	Initiate monitoring and investigation in 2007 Initiate TMDL in 2008. Complete TMDL in 2009.
Pinto Creek Ripper Spring - Roosevelt Lake 18 miles AZ15060103-018C	Copper	2004	The federally protected Colorado pikeminnow and bald eagles both occur in this area and could be negatively impacted by the elevated copper or selenium (H4). There is wide public support for development of TMDLs in Pinto Creek (H6). A Phase II copper TMDL conducted in the segment above this reach will be expanded to include this reach of Pinto Creek (M6). More data are needed to identify copper sources in this lower reach (L6).	High	Phase II copper TMDL monitoring initiated in 2000 (on upstream reach). Initiate TMDL in 2004. Complete TMDL in 2005.
	Selenium	2004		High	Initiate monitoring and investigation in 2007. Initiate TMDL in 2008. Complete TMDL in 2009.
Salt River Stewart Mountain Dam - Verde River 10 miles AZ15060106A-	Low dissolved oxygen, copper	2004	Although exceedances of the chronic copper standard can be a significant threat to aquatic and wildlife, chronic standards were only exceeded in 3 of 81 sampling events. Low dissolved oxygen may be seasonal (M3). This section of the Salt River is an important	Medium	Initiate monitoring and investigation in 2007. Initiate TMDL in 2008. Complete TMDL

003			recreational area (H7). More data are needed to identify potential sources of the copper and low dissolved oxygen (L6). The federally protected Yuma clapper rail and bald eagle should <u>not</u> be negatively impacted by the low dissolved oxygen or elevated copper.		in 2009.
San Pedro-Willcox Playa-Rio Yaqui Watershed					

Mule Gulch (3 reaches)	Copper (090A, 090B, 090C)	1990	TMDLs are underway to address loadings on all three segments of Mule Gulch and tributaries contributing significant loading.	Medium	Ongoing TMDL investigation and monitoring.
1. headwaters - above Lavendar Pit	Cadmium (090C)	2004	These TMDLs are complex due to wastewater discharges and natural background levels of copper (M3, M5) and data for source loading is difficult to collect due to slope, intermittent and ephemeral flows, and lack of rain (L6, L8).		Site-specific standard development to be completed in 2004.
4 miles	pH (090B, 090C)	1990	Currently ADEQ is developing site-specific standards that account for loadings from naturally occurring conditions (M6, L8). The TMDL is classified as a medium priority due to the time required for development of these standards.		Complete TMDL in 2005.
AZ15080301-090A	Zinc (090C)		The mining operation in the affected segments is implementing and continuing to develop additional Best Management Practices to address contamination issues.		
2. above Lavender Pit - Bisbee WWTP			Copper, zinc, and low pH present a significant threat to wildlife and human health (H1) due to the toxic nature of these pollutants and the magnitude and frequency of the exceedances:		
1 miles			* Dissolved copper was as high as 12,000 µg/L (185 times the aquatic and wildlife standard) and exceeded standards in 20 of 36 samples (55%) in Mule Gulch;		
AZ15080301-090B			* Dissolved zinc was as high as 3760 µg/L (10 times the aquatic and wildlife standard) and exceeded standards in 14 of 36 samples (39%) in Mule Gulch;		
3. Bisbee WWTP - Highway 80 bridge			* This area is a documented corridor for Mexican migrant traffic. Migrants crossing Arizona's desert may drink from reaches of Mule Gulch with flow. Consumption of this water would be hazardous due to the high metal content.		
4 miles			Note: drought has slowed sampling and the development of these TMDLs. (L6)		
AZ15080301-090C					

San Pedro River Mexico border - Charleston 28 miles AZ15050202- 008	Copper	2004	For efficiency, copper TMDL will be coordinated with the <i>Escherichia coli</i> TMDLs in the upper San Pedro River (M6). More data are needed to identify potential sources of the copper (L6). This TMDL may be more complex due to potential sources in Mexico and uncertainty of timely coordination with international entities (L7). The federally protected Southwest Willow flycatcher found in this area should <u>not</u> be negatively impacted by the elevated copper.	Medium	Initiate monitoring and investigation in 2005.  Initiate TMDL in 2006.  Complete TMDL in 2007.
San Pedro River Babocomari Creek - Dragoon Wash 17 miles AZ15050202- 003	<i>Escherichia coli</i>	2004	Exceedances of the <i>Escherichia coli</i> standard may represent a significant public health concern if people are swimming or even wading in the water (H1). Exceedances may be related to wet weather events (M3). The drainage area is relatively large and includes an area of Mexico, so determining the source of contamination may be complex and will require substantial monitoring data to identify sources (M5, L6, L7). Monitoring and investigation for the two reaches of the San Pedro River listed due to <i>Escherichia coli</i> will be coordinated (M6).	Medium	Initiate monitoring and investigation in 2005.  Initiate TMDL in 2006.  Complete TMDL in 2007.
San Pedro River Dragoon Wash- Tres Alamos 16 miles AZ15050202- 002	Nitrate	1990	The ADEQ WQARF (Superfund) Program is working with this site. The facility has instituted several actions to bring the surface and ground water into compliance with its standards and is conducting monthly monitoring of several sites along the San Pedro River (L3, M4). Although surface water quality is improving, cleanup will take time, as there is significant contamination of the ground water, which is seeping into the San Pedro (M5).	Low	Ongoing Superfund Cleanup remediation activities and effectiveness monitoring in this area.  Initiate monitoring for TMDL in 2010.  Initiate TMDL in 2011.  Complete TMDL in 2012.

San Pedro River Aravaipa Creek - Gila River 15 miles AZ15050203- 001	<i>Escherichia coli</i>	2004	Exceedances of the <i>Escherichia coli</i> standard may represent a significant public health concern if people are swimming or even wading in the water (H1). The federally protected bald eagle and the Southwest willow flycatcher found in this area may be negatively impacted by the elevated selenium (H4). <i>E. coli</i> exceedances may be related to wet weather events (M3). Prior monitoring and investigations should help support TMDL development; however, the drainage area is relatively large and includes an area of Mexico, so determining the source of contamination may be complex and will require substantial monitoring data to identify sources and natural background contributions (M5, L6, L7, L8). Monitoring and investigation for the two reaches of the San Pedro River listed due to <i>Escherichia coli</i> will be coordinated (M6).	Medium	Initiate monitoring and investigation in 2005. Initiate TMDL in 2006. Complete TMDL in 2007.
	Selenium	2004		High	
Santa Cruz-Rio Magdalena-Rio Sonoyta Watershed					
Cienega Creek headwaters - Gardner Canyon 16 miles AZ15050302- 006A	<i>Escherichia coli</i>	2004	This water is classified as a Unique Water and should be protected from degradation (H3). Exceedances of the <i>Escherichia coli</i> standard may represent a significant public health concern if people are swimming or even wading in the water (H1). More monitoring and investigation is needed to determine potential sources of the bacterial contamination (L6).	High	Initiate monitoring and investigation in 2005. Initiate TMDL in 2006 Complete TMDL in 2007.
Lakeside Lake 15 acres AZL15050302- 0760	Low dissolved oxygen, Ammonia	2004	An AZPDES permit revision is pending for a discharge to this lake (H2, M6). Low dissolved oxygen and elevated ammonia are related to historic fish kills at this lake, and the lake is an important urban recreational area (H7). Low dissolved oxygen and elevated ammonia may be related to seasonal activities (M3). Reclaimed water and storm water inputs make this TMDL complex (M5).	High	Ongoing monitoring and investigation. TMDL will be completed in 2004.

Nogales & East Nogales Wash Mexico border- Portrero Wash 6 miles AZ15050301- 011	Ammonia	2004	Exceedances of the <i>Escherichia coli</i> standard may represent a significant public health concern if people are swimming or even wading in the water (H1). Although ammonia, fecal coliform, chlorine are a significant threat to human health and wildlife (H1), actions to correct the situation are dependent on ongoing international negotiations between the U.S. government, Arizona, Mexico, the cities of Nogales, AZ and Nogales, Sonora, and the Mexican state of Sonora (L7, M4). Wastewater infrastructure in Mexico is badly deteriorated and must be replaced. Chlorine is sometimes added directly to the stream on the U.S. side of the border due to raw sewage overflows from Mexico. The source loadings are known and the technical means to correct the problem have been determined (M4). For efficiency, all four TMDLs will be developed at the same time (M6) if needed after facility upgrades.	Medium	Ongoing quarterly monitoring.
	Chlorine	1996		Medium	
	Copper	2004		Medium	
	<i>Escherichia coli</i>	1998		High	Necessity of TMDL will be based on outcome of current international discussions regarding upgrade of treatment facility.
Santa Cruz River Mexico border- Nogales WWTP 17 miles AZ15050301- 010	<i>Escherichia coli</i>	2002	Exceedances of the <i>Escherichia coli</i> standard may represent a significant public health concern if people are swimming or even wading in the water (H1). This area is a corridor for Mexican migrants who may consume this water while crossing the desert, although the water is not protected for this use (H1).  The Friends of the Santa Cruz River, a volunteer monitoring group, is interested in maintaining high quality water in the Santa Cruz River (H6). Completing this TMDL may be complex due to probable sources in Mexico (L7), and intermittent stream flow and drought conditions will slow collection of adequate data to determine source loadings (L6).	High	Stream has been dry due to drought in 2002-2003.  TMDL monitoring will be initiated when flow resumes.  Hope to initiate TMDL monitoring by 2006.  Initiate TMDL by 2007.  Complete TMDL by 2008.  (Note: Long-term fixed station

					monitoring site at the border.)
Sonoita Creek 750 feet below WWTP - Santa Cruz River 14 miles AZ15050301- 013C	Zinc	2004	The federally protected Gila topminnow occurs in this reach and could be negatively impacted by dissolved zinc (H4). Zinc exceedances just above standards; therefore, they do not represent a significant ecological health concern. Source of zinc is unknown (L6); however, a wastewater treatment plant is directly upstream from the monitoring site. Discharge monitoring reports from this treatment plant will be reviewed, and if needed, water quality improvements will be pursued through enforcement actions.	High	Initiate monitoring and investigation 2006. Initiate TMDL in 2007. Complete TMDL in 2008.
<b>Upper Gila Watershed</b>					
Cave Creek headwaters - South Fork of Cave Creek 8 miles AZ15040006- 852A	Selenium	2004	This stream is classified as a Unique Water (H6). Further monitoring is needed to determine selenium source loading and contribution from natural sources (L6, L8).	High	Initiate monitoring in 2005. Initiate TMDL in 2006. Complete TMDL in 2007.
Gila River Skully Creek - San Francisco River 15 miles AZ15040002- 001	Selenium	2004	Monitoring and investigation is needed to determine potential sources of selenium (L6). Selenium may be contributed by sources in New Mexico, adding to the complexity of the TMDL (M5). The federally protected spikedace and loach minnow that occur in this area should <u>not</u> be negatively impacted by the elevated	Medium	Initiate monitoring and investigation in 2007. Initiate TMDL in 2008. Complete TMDL in 2009.

			selenium.		
Gila River Bonita Creek- Yuma Wash 6 miles AZ15040005- 022	<i>Escherichia coli</i>	2004	Exceedances of the <i>Escherichia coli</i> standard may represent a significant public health concern if people are swimming or even wading in the water (H1). Exceedances may be related to wet weather events (M3). The drainage area is nearly 8,000 square miles, so determining the source of contamination may be complex and will require substantial monitoring data to identify sources (M5, L6). ADEQ will coordinate this investigation with the other <i>E. coli</i> TMDL downstream (M6).	Medium	Initiate monitoring and investigation in 2006. Initiate TMDL in 2007. Complete TMDL in 2008.
<b>Verde Watershed</b>					
East Verde River Ellison Creek - American Gulch 20 miles AZ15060203- 022B	Selenium	2004	Further monitoring and investigation is needed to determine source loadings and contribution from natural sources (L6, L8) The federally protected Gila trout that occur in this area should <u>not</u> be negatively impacted by the slightly elevated selenium.	Low	Ongoing fixed station monitoring. Initiate monitoring and investigation in 2010. Initiate TMDL investigation in 2011 Complete TMDL in 2012.
Verde River Bartlett Dam - Camp Creek 7 miles AZ15060203- 004	Copper, Selenium	2004	The Federally protected razorback sucker and bald eagle occur in this area. The copper may negatively impact the razorback sucker and the selenium may negatively impact the bald eagle (H4). Although exceedances of the chronic copper and selenium standards can be a significant threat to aquatic life and wildlife, chronic standards were only exceeded in 4 of 80 copper sampling events and 4 of 23 selenium sampling events (L5). This section of the Salt River is an important recreational area (H7). More data are needed to identify potential sources of the copper and low dissolved oxygen (L6).	High	Initiate monitoring and investigation in 2007. Initiate TMDL in 2008. Complete TMDL in 2009.
Whitehorse	Low	2004	ADEQ is currently establishing criteria to	Medium	Monitoring and

Lake 41 acres AZL15060202- 1630	dissolved oxygen	classify its lakes, which may result in changes in assessment status (M6). Classification is to be completed by 2004. Low dissolved oxygen may result in fish kills, and this lake is an important fishing area (H7). More investigation is needed to identify the sources of pollutants causing the low dissolved oxygen (L6).	investigation initiated in 2001. Initiate TMDL in 2005. Complete TMDL in 2006.
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**\*\* Date shown is when action is to be initiated. Time table will be adjusted based on availability of flowing water, as Arizona is currently in a drought, and availability of resources to complete TMDLs.**

#### **High Priority Factors:**

H1. Substantial threat to health and safety of humans, aquatic life, or wildlife based on:

- a. Number and type of designated uses impaired,
- b. Type and extent of risk from the impairment to human health or aquatic life,
- c. Pollutant causing the impairment, or
- d. Severity, magnitude, and duration the surface water quality standard was exceeded.

H2. An new or modified individual NPDES or AZPDES permit is sought for discharge to the impaired water.

H3. Surface water is listed as a Unique Water or is part of an area classified as a "wilderness area", "wild and scenic river" or other federal or state special protection of the water resource.

H4. Surface water contains a species listed as "threatened" or "endangered" under the federal Endangered Species Act and the presence of the pollutant in the surface water is likely to jeopardize the listed species.

H5. A delay in conducting the TMDL could jeopardize ADEQ's ability to gather sufficient credible data necessary to develop the TMDL.

H6. There is significant public interest and support for development of a TMDL.

H7. The surface water or segment has important recreational and economic significance to the public.

H8. The pollutant has been listed for eight years or more (starting with the 2002 listing).

#### **Medium Priority Factors:**

M1. The surface water fails to meet more than one designated use.

M2. The pollutant exceeds more than one surface water quality standard.

M3. The exceedance is correlated to seasonal conditions caused by natural events such as storms, weather patterns, or lake turnover.

M4. Actions in the watershed may result in the surface water attaining applicable water quality standards; however, load reductions may take longer than the next 303(d) listing cycle.

M5. The type of pollutant and other factors relating to the surface water or segment make the TMDL very complex.

M6. ADEQ's administrative needs, including TMDL schedule commitments with EPA, permitting needs, or basin priorities that require completion of the TMDL.

**Low Priority Factors:**

- L1. ADEQ has formally submitted a proposal to delist the surface water or pollutant to EPA. If ADEQ makes the submission outside of listing process cycle, the change in priority ranking will not be effective until EPA approves the report.
- L2. ADEQ has modified or formally proposed a modification to the applicable surface water quality standard or designated use, which would result in the surface water no longer being impaired, but EPA has not yet approved the modification.
- L3. The surface water is expected to attain surface water quality standards due to any of the following:
  - a. Recently instituted treatment levels or best management practices in the drainage area,
  - b. Discharges or activities related to the impairment have ceased, or
  - c. Actions have been taken and the controls are in place or scheduled for implementation that are likely to bring the surface water back into compliance.
- L4. The surface water is ephemeral or intermittent. ADEQ shall re-prioritize the surface water if the presence of the pollutant in the listed water poses a threat to the health and safety of humans, aquatic life, or wildlife using the water (H1) or the pollutant is contributing to the impairment of a downstream, perennial surface water.
- L5. The pollutant poses a low ecological and human health risk.
- L6. Insufficient data exist to determine the source of the pollutant load.
- L7. The uncertainty of timely coordination with national and international entities concerning international waters makes TMDL development complex.
- L8. Naturally occurring conditions are a major contributor to the impairment.
- L9. No documentation or effective analytical tools exist to develop a TMDL for the surface water with reasonable accuracy.

**4. Arizona's 2004 Proposed 303(d) List Response to Comments**

Arizona's first draft of *The Status of Water Quality in Arizona – 2004, Arizona's Integrated 305(b) and 303(d) Listing Report* was given public review from November 3, 2003 through December 5, 2003. The second draft report was given public review from February 26, 2004 through March 29, 2004. For each commenter, comments are divided into two parts (if applicable): those addressing the first draft, followed by those addressing the second draft. Comments not directly addressing the 303(d) List are found at the end of this document.

**BHP Copper**

***First draft comments:***

**Comment 1:** BHP requests that ADEQ remove three washes from the Pinto Creek assessment tables. Cottonwood Canyon, Gold Gulch Canyon and Miller Springs Canyon have never appeared on state surface water lists before. These gulches are part of and adjacent to the PVO property. Periodically seeps occur in these gulches and PVO agreed to monitor the seeps when they are flowing as part of the AZPDES permit. It is unclear what the basis for listing these three gulches and applying the designated use is. Simply having seep

water quality information shouldn't be cause for a gulch to appear on such a list. My understanding is that this type of listing of surface water and applying a corresponding designated use must be done by rule.

**Response 1:** Cottonwood Canyon, Gold Gulch Canyon, and Miller Springs Canyon have not appeared in Arizona's assessments previously because data were not made available to ADEQ's assessment group. It is ADEQ's understanding that these drainages are tributary to Pinto Creek and are therefore included in Arizona's water quality standards in the definition of a "surface water" (Arizona Administrative Code (A.A.C.) R18-11-101(43)(e)). Arizona's surface water quality standards are therefore applicable to these waters (A.A.C. R18-11-102(A)) and were used to assess the data obtained by ADEQ. Surface waters not named in Appendix B of the standards are assigned designated uses in accordance with the tributary rule (A.A.C. R-18-11-105) based on flow regime and elevation. It should also be noted that ADEQ did not "list" (on the 303(d) List) these gulches as suggested above, but rather placed them in Category 3, which includes those waters assessed as "inconclusive" due to lack of adequate data.

**Comment 2:** The listing also appears inconsistent with ADEQ's position that ephemeral waters are low priority waters for TMDL analysis.

**Response 2:** Ephemeral waters are subject to state water quality standards and must be assessed as impaired if the appropriate number of exceedances occurs in accordance with the Impaired Water Identification rule. If found to be impaired, ADEQ agrees that ephemeral waters are a low priority for TMDL development, unless the pollutant listed poses a threat to the health and safety of humans, aquatic life, or wildlife using the water, or the pollutant is contributing to the impairment of a downstream perennial surface water or segment (A.A.C. R18-11-606(B)(3)(d)). Cottonwood Canyon, Gold Gulch Canyon, and Miller Springs Canyon were assessed were not assessed as "impaired," but rather as "inconclusive" and placed on ADEQ's Planning List; therefore, prioritization for TMDL development is not warranted at this time. These gulches are, however, tributary to Pinto Creek – an ongoing TMDL investigation. Data on the impacts from these drainages to Pinto Creek are important to finalizing that study.

#### **Phelp's Dodge Corporation**

##### ***First draft comments:***

**Comment 3:** Phelps Dodge continues to question the appropriateness of assessing or listing ephemeral waters in Arizona at the current time. Even assuming that ephemeral waters are subject to federal Clean Water Act jurisdiction, there are numerous unanswered technical concerns regarding the assessment and listing of ephemeral waters.

**Response 3:** Ephemeral waters are included in Arizona's surface water standards in the definition of "surface water" (A.A.C. R18-11-101(43)(c)) and have both designated uses and surface water quality standards established for them. ADEQ is required under the Clean Water Act to assess all of Arizona's surface waters based on available monitoring data.

**Comment 4:** When should an ephemeral water be sampled (*i.e.*, first flush versus stagnant pools or some other point) in order for the data to be truly representative? Are exceedances of water quality standards during storm events truly indicative of impairment of the ephemeral water? What is the critical flow condition used for modeling/loading analysis of ephemeral waters?

**Response 4:** Arizona's surface water standards apply to all conditions unless specifically exempted in the standards (*i.e.*, A.A.C. R18-11-114, 119 and 122). The water quality standards must protect people, wildlife, and domestic animals from potential pollutants. This includes pollutants detected in stagnant pools or during storm events, as these may be sources of drinking water for animals.

Modeling and loading analysis issues are addressed during the TMDL process. ADEQ collects water quality data during various scenarios, including first flush, storm water runoff, and stagnant pools, to aid in determining loadings and the characteristics of the parameter of concern in that environment. Public review and input concerning these issues is solicited during TMDL development.

**Comment 5:** Another concern is whether Arizona's current surface water quality standards are appropriate for ephemeral waters. The criteria supporting the current water quality standards do not account for the unique conditions that are created by episodic storm water discharges into ephemeral drainages. These unique conditions require that separate and appropriate standards be developed for storm water runoff into ephemeral waters. Phelps Dodge questions whether any ephemeral waters should be listed until appropriate water quality standards for ephemeral waters and wet weather flows have been developed and the technical concerns regarding the assessment and listing of ephemeral waters have been answered. At the very least, Phelps Dodge believes that if such waters continue to be listed, the waters should be identified as low priority.

**Response 5:** ADEQ has recognized the unique nature of ephemeral surface waters in its current water quality standards. As defined in the standards, an ephemeral water flows only in direct response to precipitation (A.A.C. R-18-11-101(22)). The "Aquatic and Wildlife ephemeral" designated use (A&We) is applied to these waters, and thus the A&We standards are used for assessment. These standards are different from those applied to perennial and intermittent waters, which receive the Aquatic and Wildlife coldwater or warmwater designated use. In addition, ADEQ repealed in 2002 the chronic standards on ephemeral waters, recognizing that chronic exposure conditions do not exist due to the very short duration of flows in typical ephemeral systems.

In accordance with the Impaired Water Identification Rule, ephemeral waters on the 303(d) List are given low priority for TMDL development, unless the listed water poses a threat to the health and safety of humans, aquatic life, or wildlife using the water, or the pollutant is contributing to the impairment of a downstream perennial surface water or segment (A.A.C. R-18-11-606(B)(3)(d)).

**Comment 6:** Notwithstanding the clear language in the second sentence in A.A.C. R18-11-120(C) regarding determining compliance with chronic aquatic and wildlife criteria and corresponding language in the impaired water identification rule at A.A.C. R18-11-605(D)(2)(b), ADEQ takes the position in these sections that it will assess impairment for chronic water quality standards based on a formula (*i.e.*, 25% or more of the

samples exceed the chronic standard when 10 or more samples have been collected and a minimum of three exceedances if less than 10 samples have been collected) that has no basis in law or applicable rules (*i.e.*, the surface water quality standards or the impaired water identification rule). Contrary to ADEQ's proposed assessment formula, the language in A.A.C. R18-11-605(D)(2)(b), in combination with the language in A.A.C. R18-11-120(C), requires that there be more than one exceedance of the chronic standard (each exceedance is determined from the geometric mean of the analytical results of the last four samples taken at least 24 hours apart) if there are less than "20 spatially or temporally independent samples collected over three or more temporally independent sampling events." Accordingly, in order to determine whether a water body is impaired for a chronic aquatic and wildlife water quality standard if there are less than "20 spatially or temporally independent samples collected over three or more temporally independent sampling events," there must be at least two temporally independent sampling events, with each event consisting of at least four samples taken at least 24 hours apart. Without this information, the water body cannot be listed as impaired under the applicable state laws and rules.

ADEQ's proposed formula for assessing chronic impaired also is contrary to language in its response to comments on the impaired water identification rule. Several commentors raised concerns with ADEQ's language in R18-11-605(D)(2)(a) and (b) that allowed waters to be listed on fewer than 20 samples. ADEQ responded by emphasizing that each of the standards noted in 605(D)(2)(b) required a specific number of samples before evaluation could begin. (Quote included from 8 Ariz. Admin. Reg. 3445, Aug. 9, 2002.)

**Response 6:** ADEQ has reviewed and revised its application of the chronic Aquatic and Wildlife standards in accordance with the Impaired Water Identification Rule. The Department agrees that A.A.C. R18-11-605(D)(2)(b) requires that a surface water shall be placed on the 303(d) List based on "more than one exceedance of an aquatic and wildlife chronic water quality standard, as specified in 18 A.A.C. 11, Article 1, Appendix A, Table 1." However, no reference is made to a geometric mean of the last four samples, nor is any reference made to A.A.C. R18-11-120(C), which is applicable for enforcement only. Although a geometric mean of the last four samples must be taken to apply the standard for enforcement purposes, the Impaired Water Identification Rule requires only two exceedances to be placed on the 303(d) List, with no minimum sample size or application of a geometric mean. Therefore, rather than basing its listings on a 25% exceedance rate, ADEQ has revised the report so that any stream reach or lake with more than one exceedance of a chronic Aquatic and Wildlife standard has been placed on the 2004 303(d) List. \*

**Comment 7:** Category 4D: Phelps Dodge objects to this new subcategory that ADEQ is using to place water bodies that "would be impaired under the former turbidity standard." ADEQ is in essence taking the position that such water bodies should be assessed as "not attaining" one or more designated uses even though the turbidity standard is no longer valid and was removed from Arizona's surface water quality standards because of several technical and other similar problems (the problems were identified by ADEQ and are listed at 8 Ariz. Admin. Reg. 1293-94 (Mar. 29, 2002)). All of the water bodies that ADEQ is proposing to include in Category 4D should be removed to Category 2 or 3 as appropriate.

**Response 7:** In an effort to track and prioritize those waters with potential suspended sediment or bottom deposit violations while new standards and implementation procedures are under development, ADEQ developed the new Category 4D, a subset of Category 4 "not attaining" waters. However, the Department has made the decision to remove the subcategory and assess the waters as "inconclusive" for the Aquatic and Wildlife designated uses, placing them in Categories 2 or 3 as suggested above. The category was removed from the second draft, released in February 2004. These surface waters will remain a priority for further monitoring.

**Comment 8:** Chapter III, p. 4, Chapter IV, p. 2, & Chapter VI (various pages): Phelps Dodge objects to the language on these pages that suggests that EPA may add the waters in the new category 4D to the 2004 303(d) List based on vague determinations that the old turbidity data results may suggest some type of narrative standards violation. Although EPA may attempt to take such steps, in direct opposition to its own policies and guidance documents and in opposition to express state law, ADEQ should not include any language in its integrated report that would appear to endorse or suggest any such outcome.

As ADEQ expressly noted in making its decision to remove the former turbidity standard, there were numerous problems and concerns with the standard. It does not make sense to suggest that waters will continue to be listed based on a former standard that was found to have technical and other problems. Moreover, on what basis would a water be listed under a narrative standard when there are no implementation procedures? EPA would in effect be making up its own interpretations that have no reality in fact as applied to Arizona.

**Response 8:** ADEQ recognizes that in accordance with state statute, ADEQ cannot place a surface water on the 303(d) List based on a narrative standard violation until implementation procedures are adopted (A.R.S. § 49-232(F)). Since these have not yet been adopted, ADEQ has not placed any surface waters on the 2004 303(d) List based on a narrative standard violation. Additionally, ADEQ recognizes that it cannot make a 303(d) listing based on a standard that has been repealed; therefore, ADEQ has not made any listings based on turbidity exceedances.

The U.S. EPA, however, has the authority to make additions to Arizona's 303(d) List. EPA has indicated to ADEQ that it may list those waters that would have been impaired under the former turbidity standard, citing the exceedances as evidence of a narrative bottom deposit standard violation (A.A.C. R-18-11-108(A)(1)). ADEQ has chosen to share this information in an effort to keep the public informed of potential changes to the 303(d) List. The Department has not suggested such an outcome to EPA.

**Comment 9:** Boulder Creek (unnamed wash to Wilder Creek (AZ15030202-006B)), Boulder Creek (Wilder Creek to Copper Creek (AZ15030202-005A)), and Burro Creek (Boulder Creek to Black Canyon (AZ15030202-004)) should not be assessed as impaired for mercury based on the monitoring data listed in Table 5 and for other reasons discussed in more detail in the following paragraphs. As noted above, if there are less than 20 samples for a particular parameter, then a water can be assessed as impaired for chronic aquatic and wildlife water quality standards only if more than one exceedance of the standard is determined through the geometric mean of the analytical results of the last four samples taken at least 24 hours apart. In other

words, at least eight samples are required. In contrast, Table 5 only shows that there were six qualifying samples for Boulder Creek (unnamed wash to Wilder Creek (AZ15030202-006B)), three qualifying samples for Boulder Creek (Wilder Creek to Copper Creek (AZ15030202-005A), and three qualifying samples for Burro Creek (Boulder Creek to Black Canyon (AZ15030202-004)). There also is no discussion in the draft report of the required calculation of the geometric mean of the last four samples taken at least 24 hours apart in order to determine whether one or more exceedances have occurred. The above identified segments from the Bill Williams watershed clearly do not qualify for listing under Arizona's impaired water identification rule and should be identified as inconclusive with respect to chronic mercury.

**Response 9:** (See Response 6 above.) These stream reaches will remain on the 303(d) List due to more than one exceedance of a chronic Aquatic and Wildlife standard.

**Comment 10:** Arizona's impaired water identification rule also provides that data is credible and relevant to an impaired water identification only when the monitoring entity has developed both a Quality Assurance Plan and a Sampling and Analysis Plan that contain certain elements. A.A.C. R18-11-602(A). The information relied upon with respect to listing the above-identified segments is data primarily from Phelps Dodge Bagdad's instream monitoring program. While Phelps Dodge has developed a QA/QC plan for the data, it has not developed a sampling and analysis plan specific to mercury issues. The data is not credible and relevant as applied to the impairment assessment for mercury. This is especially true given the need for clean sampling procedures when conducting sampling for mercury concentrations in surface water and the disconnect between mercury concentrations in the water column and methylmercury concentrations in fish tissue.

**Response 10:** Phelps Dodge Bagdad provided ADEQ a copy of its *Ambient Surface Water Monitoring Program*, dated March 1, 2002, revised March 6, 2002. In this document, both total recoverable mercury and dissolved mercury are listed in section 2.0 (Ambient Surface Water Analysis) as parameters to be sampled and analyzed. ADEQ determined that this document is sufficient to meet the credible data requirements of the Impaired Water Identification Rule (A.A.C. R-18-11-602).

The reference to clean sampling procedures is noted, but these procedures are not required for mercury data to be considered credible and scientifically defensible. ADEQ mercury samples collected from the Bill Williams watershed in recent months using clean sampling methods produced mercury results at similar concentrations to the data provided by Phelps Dodge, and lend further support that Phelps Dodge's data were accurate and credible.

**Comment 11:** Even more importantly, the water should not be listed as impaired because any identified mercury loadings clearly appear to be from naturally occurring conditions. As ADEQ is aware, Arizona's TMDL statute provides that ADEQ cannot list a water as impaired if pollutant loadings from naturally occurring conditions are sufficient to cause a violation of applicable surface water quality standards. A.R.S. § 49-232(D).

**Response 11:** ADEQ agrees that where natural background alone exceeds water quality standards, a surface water would not be listed as impaired (A.R.S. § 49-232(D)). ADEQ does not yet have sufficient data to make such a determination for mercury in the Bill Williams Watershed. Even if some natural sources exist, a TMDL investigation is generally needed to accurately determine what portion of the impairment is due to natural conditions alone versus anthropogenic activities. Until such time that ADEQ determines the extent, if any, of "natural background" impairment, surface waters with sufficient exceedances of the current standards will remain on the 303(d) List.

**Comment 12:** Another issue of concern with ADEQ's proposed mercury listings in the Bill Williams Watershed is the disconnect between mercury levels in the water column and methylmercury levels in fish tissue. ADEQ does not appear to have performed any analysis regarding this potential relationship, but has simply jumped to unsupported conclusions based on existing water column data and has decided to list these water bodies simply because they have existing mercury data even when such information may have no correlation to the Alamo Lake concern, the listing decision is contrary to Arizona's impaired water identification rule, and the mercury levels clearly are caused by naturally occurring conditions. The above-identified stream segments in the Bill Williams watershed clearly do not qualify for listing as impaired for mercury and appropriate changes should be made to ADEQ's draft integrated report.

**Response 12:** The relationship between mercury levels in the water column and methylmercury levels in fish tissue has been established in previous TMDL studies conducted by ADEQ, including the *Total Maximum Daily Load and Implementation Plan for Mercury, Peña Blanca Lake, Arizona* (1999), the *Total Maximum Daily Load and Implementation Plan for Mercury, Arivaca Lake* (1999), and numerous other TMDLs nationwide. It is also well established that small amounts of mercury in the water column will quickly methylate in a lake or reservoir if reducing conditions exist. Furthermore, preliminary data collected for the Alamo Lake TMDL clearly show the Burro Creek watershed (which includes Boulder Creek) and the Santa Maria watershed (to a lesser extent) are sources of mercury. The extent and specific locations are still being defined.

Regardless, this issue is outside the scope of this report. Mercury data collected on Boulder Creek and Burro Creek were assessed under the applicable Aquatic and Wildlife chronic standards and Fish Consumption standards according to the designated uses assigned in rule. ADEQ assumes that the "listing decision is contrary to Arizona's impaired water identification rule" comment refers to previous comments on assessment of chronic standards above. (See Responses 6 and 9 above.) Naturally occurring conditions are addressed in Response 11 above.

**Comment 13:** On page 11 of Table 5, both copper and zinc are listed as impaired in the "Designated Use Support" column. However, as ADEQ is aware, and as is reflected in the sample results listed on pages 9-10 of Table 5, the only copper and zinc (A&Ww acute) standard exceedances in Boulder Creek have been sampled right at the Hillside Mine area just below the confluence with Wilder Creek. As noted in the 2002

303(d) List, the copper and zinc listings are only for the segment from Wilder Creek to Butte Creek. This limitation should be noted on page 11 of Table 5.

**Response 13:** The Department agrees with the commenter that recent water quality sampling data and the water quality modeling completed for the Boulder Creek TMDL on this reach (Boulder Creek, Wilder - Copper Creek) confirm that copper and zinc impairment is only associated with the upper portion of the reach. The following comment appeared in the draft TMDL Priority Ranking table: "Investigations indicate that arsenic impairs the entire reach, while copper and zinc impair the segment between Wilder Creek and Butte Creek, which is below the lower tailings pile." This comment has been added to the monitoring table (Table 5) in the summary comment column for this reach as well as the assessment table (Table 6).

**Comment 14:** The comment section on page 11 of Table 5 should be amended as follows (deletions indicated by strikeout and additions by underlining and ALLCAPS): TMDLs for arsenic, copper, and zinc ARE IN THE PROCESS OF BEING ~~were~~ completed and WILL THEN BE sent to EPA for approval. If they are approved before the 303(d) List is sent to EPA, this reach will be assessed as "not attaining" for these parameters and placed on the Planning List for TMDL follow-up monitoring.

**Response 14:** ADEQ has corrected the error. Due to the enhanced public participation process required by state law, the TMDLs have not yet been submitted to EPA.

**Comment 15:** Chapter IV, pp. 18-19 (Bill Williams Watershed): Consistent with the concerns expressed above, ADEQ should delete any language regarding adding mercury to the 303(d) List due to chronic mercury exceedances from the status summaries for Boulder Creek (unnamed wash to Wilder Creek), Boulder Creek (Wilder Creek to Copper Creek), and Burro Creek (Boulder Creek to Black Canyon).

**Response 15:** (See Responses 6, 10, 11 and 12 above.)

**Comment 16:** Chapter IV, p. 20 (Bill Williams Watershed): The status discussion for Alamo Lake states that EPA placed this water body on Arizona 2002 303(d) List because of mercury in fish tissue and the supposed correlation of this with a potential narrative standard violation. The status discussion further recognizes that Arizona's TMDL statute requires adoption of narrative implementation procedures before ADEQ may use evidence of narrative violations in a listing decision. However, the status discussion then states that once a surface water is listed it cannot be delisted until a TMDL is complete or sufficient data are collected to indicate that mercury in fish tissue is no longer a concern (i.e., fish consumption advisory removed). It should be noted that to our understanding, a fish consumption advisory has never been issued for Alamo Lake. Accordingly, Phelps Dodge continues to question the technical or legal basis for EPA's decision to add Alamo Lake to Arizona's 303(d) List in the first place.

**Response 16:** Phelps Dodge is correct that at the time of the first draft report, a fish consumption advisory had not been issued. ADEQ's statement was made in error. However, it is true that EPA listed the lake due to mercury levels in fish tissue and it must remain on the 303(d) List. Also note that a fish consumption advisory has since been issued, in February 2004.

**Comment 17:** Chapter IV, p. 162 & Chapter IV, p. 178 (San Pedro – Willcox Playa – Rio Yaqui Watershed): The summary row on page 162, Table 17 and the summary row for Brewery Gulch on page 178, Table 18 identify Brewery Gulch as impaired for dissolved copper under the A&We designated use. This should be changed to inconclusive for the following reasons. First, as ADEQ has represented on several occasions, it does not plan to list separately the tributaries to Mule Gulch on the 303(d) List, but rather plans to address Mule Gulch's associated tributaries under the pending TMDL for Mule Gulch. Second, ADEQ is prohibited by statute from identifying waters "in which pollutant loadings from naturally occurring conditions alone are sufficient to cause a violation of applicable surface water quality standards" as "impaired." Brewery Gulch clearly fits within this category and should not be identified as impaired in the 305(b) report.

**Response 17:** The commenter is correct that ADEQ does not plan to list separately the tributaries to Mule Gulch on the 303(d) List. The Category 5 table (the 303(d) List, Table 25, p. V-5 of the draft) does not include Brewery Gulch or any other Mule Gulch tributaries. However, ADEQ must assess Brewery Gulch as impaired based on five exceedances of the acute Aquatic and Wildlife ephemeral standard in accordance with the Impaired Water Identification Rule and per federal requirements to assess all waters of the State. This impairment will be addressed in the Mule Gulch TMDL report.

ADEQ agrees that where natural background alone exceeds water quality standards, a surface water would not be listed as impaired (A.R.S. § 49-232(D)). However, if some natural sources exist, further study is warranted to accurately determine what portion of the impairment is due to natural conditions alone versus anthropogenic activities. Once this is done, site specific standards should be developed. In the case of the Mule Gulch TMDL, ADEQ is in the process of developing these standards, which then must be established through a public process. Until such time that these standards are adopted, Brewery Gulch must be assessed based on current water quality standards and is therefore impaired. It will not be placed on the 303(d) List, as stated above.

**Comment 18:** Chapter IV, p. 166 (San Pedro – Willcox Playa – Rio Yaqui Watershed): There have been at least 35 samples collected for the Mule Gulch segment above Lavender Pit (sampling location – Mule Gulch 100) through 2000, but only a few of the sampling results are included in Table 17. What is the rationale for including or excluding sample results? In addition, for the "below old mill site" sample location, the copper maximum should be 4,000, not 40,000.

**Response 18:** All data collected by ADEQ within the assessment period were included in the integrated report. The Impaired Water Identification rule requires that when samples from a surface water or segment are not spatially independent (more than 200 meters apart) or are not temporally independent (more than seven days apart), one of the following "resultant values" must be used to represent the dataset, depending on the nature of the parameter: the appropriate measure of central tendency, the maximum value, or the worst case measurement (A.A.C. R-18-11-602(A)(4)). Individual samples collected near the same time or very close together will therefore be combined and shown as one sample, and may appear to represent fewer samples than

were actually collected. ADEQ will correct the erroneous copper maximum at the old mill site. Phelps Dodge is correct that the value is 4,000 µg/L.

**Comment 19:** Chapter IV, p. 167-69 (San Pedro – Willcox Playa – Rio Yaqui Watershed): Table 17 only includes 5 samples for sampling location MG-200 for the Mule Gulch segment from the Bisbee WWTP to Highway 80 when more than 50 have been collected through 2000, and several subsequently. What is the rationale for including or excluding sample results?

**Response 19:** See **Response 18** above. The Impaired Water Identification rule requires combination of samples that are not temporally independent (taken more than seven days apart) into one resultant value. For example, 17 samples were taken at MG-200 between October 11<sup>th</sup> and October 18<sup>th</sup> of 2000, but appear in the assessment as only one sample event.

**Comment 20:** Sampling location MG-300 and the second Elfrida cutoff are outside of the effluent-dominated section, but sample results are compared to edw standards. Site MG-300 and the second Elfrida cutoff are on the downgradient side of the bridge, and clearly ephemeral, and are below the normal reaches of the constant effluent dominated source. Ephemeral standards should be applied here. Also, only a portion of the samples were included. As above, what is the rationale for sample data inclusion or exclusion?

**Response 20:** ADEQ agrees and has moved these sites in the second draft to the ephemeral reach below (Mule Gulch, below Highway 80 bridge, reach -090D) and assessed the data based on the applicable designated uses (Aquatic and Wildlife ephemeral, Partial Body Contact, Agricultural Livestock Watering). Additionally, ADEQ erred in placing sample site MG-100 in reach -090B; the site is actually above Lavender Pit in reach -090A. This site will also be moved to the correct reach for the final report. As a result, Mule Gulch from headwaters to above Lavender Pit will also be placed on the 303(d) List due to copper. (See Response 16 above to address the data inclusion/exclusion comment.)

**Comment 21:** Status of Mule Gulch TMDL: Phelps Dodge also should point out that during the course of TMDL investigations conducted in the Mule Gulch drainage area, ADEQ determined that naturally occurring conditions (*i.e.*, storm water runoff from undisturbed areas) alone would be sufficient to cause a violation of the default water quality standards for copper and zinc applicable to Mule Gulch and its dry tributaries. Because of this determination, ADEQ has noted that it would be premature to move forward with any further TMDL development until meaningful water quality standards for Mule Gulch are adopted. In addition, under such circumstances, state law mandates that such waters not even be listed as impaired (*see* A.R.S. § 49-232(D)).

**Response 21:** ADEQ agrees that where natural background alone exceeds water quality standards such a surface water would not be listed as impaired; however the Department has determined that anthropogenic sources are also contributing to the impairment on Mule Gulch. ADEQ is currently in the process of developing site specific standards, which then must be established through a public process. Until

such time that these standards are effective, Mule Gulch must be assessed based on current water quality standards and will remain on the 303(d) List.

**Comment 22:** Phelps Dodge finally should continue to point out that in light of the U.S. Supreme Court's *SWANCC* decision it is unclear whether Mule Gulch and associated tributaries even qualify as jurisdictional waters of the United States. Mule Gulch arguably is an isolated water or at the most is a disconnected tributary to ephemeral Whitewater Draw, which flows across the international boundary into Mexico. Accordingly, Mule Gulch is not a tributary to a water that would otherwise qualify as a navigable water and arguably would not qualify as a water of the United States under the *SWANCC* opinion. Phelps Dodge therefore questions ADEQ's continuing authority to (1) apply surface water quality standards to Mule Gulch and associated tributaries and/or (2) develop a TMDL for such water bodies.

**Response 22:** Ephemeral waters are included in Arizona's surface water standards in the definition of "surface water" (A.A.C. R18-11-101(43)(c)) and are therefore subject to Arizona's surface water standards. ADEQ is required under the Clean Water Act to assess all of Arizona's surface waters based on available monitoring data.

**Comment 23:** Chapter V, p. 1: As noted above, Phelps Dodge strongly disagrees with ADEQ's proposal to create a new category 4D. In addition, Phelps Dodge strongly disagrees with any language in the 305(b)/303(d) Integrated Report that suggests that EPA may overfile and list the waters in category 4D based on some vague interpretation of Arizona's narrative water quality standards or some interpretation that it can list waters even when the basis for the past listing is no longer valid and has been removed from Arizona's surface water quality standards.

**Response 23:** (See Responses 7 and 8.)

**Comment 24:** Chapter V, p. 5 (303(d) List) & Chapter V, Table 31: As noted above, the proposed chronic mercury listings should be removed from Burro Creek and the two segments of Boulder Creek in the Bill Williams watershed. In addition, ADEQ should clarify that the copper and zinc listings for Boulder Creek are only for the segment from Wilder Creek to Butte Creek.

**Response 24:** (See Responses 6, 10, 11 and 12 above.)

#### **Phelp's Dodge Corporation**

##### ***Second Draft Comments:***

**Comment 25:** Phelps Dodge strongly objects to the suggestion on these pages that Arizona's impaired water identification rule requires only two grab sample results in excess of applicable chronic standard for a water segment to be placed on the 303(d) List, with no minimum sample size or application of a geometric mean. These statements are entirely inconsistent with ADEQ's explanations of A.A.C. R18-11-605(D)(2)(b) in the preamble to Arizona's impaired water identification rule. As noted in Phelps Dodge's December 5, 2003 comments, several commenters had raised concerns with ADEQ's language in R18-11-

605(D)(2)(a) and (b) that allowed waters to be listed on fewer than 20 samples. ADEQ responded by emphasizing that each of the standards noted in 605(D)(2)(b), including the chronic aquatic and wildlife standards, required a specific number of samples before evaluation could begin. (Quote included from 8 Ariz. Admin. Reg. 3445, Aug. 9, 2002.)

The obvious intent behind the language in R18-11-605(D)(2)(b) was to require that before a water body is assessed as impaired for chronic aquatic and wildlife water quality standards on less than 20 samples, that the appropriate number of similar, multiple sampling events (as required under R18-11-120(C) for chronic standards) be performed. ADEQ's proposal to simply list waters based on at least two chronic standards excursions from grab sampling ignores these statements and in effect ignores the rationale and assumptions behind the chronic criteria, which were established to assess long-term exposures and effects from water quality. Two grab samples do not adequately demonstrate whether there is true impairment from a chronic perspective. ADEQ's approach for assessing chronic standards for aquatic life is a classic bait and switch – tell the regulated community not to worry about the ability to list based on more than one exceedance of chronic standards because the standards require similar, multiple sampling events to even assess impairment and then change the approach at a later time without any public input or process.

**Response 25:** As stated in Phelps Dodge Response 6," A.A.C. R18-11-605(D)(2)(b) requires that a surface water shall be placed on the 303(d) List based on "more than one exceedance of an aquatic and wildlife chronic water quality standard, as specified in 18 A.A.C. 11, Article 1, Appendix A, Table 1." However, no reference is made to a geometric mean of the last four samples, nor is any reference made to A.A.C. R18-11-120(C), which is applicable for enforcement only. Although a geometric mean of the last four samples must be taken to apply the standard for enforcement purposes, the Impaired Water Identification Rule requires only two exceedances to be placed on the 303(d) List, with no minimum sample size or application of a geometric mean.

ADEQ is aware of Phelps Dodge's concerns regarding previous comments on the Impaired Water Identification Rule; however, the Department must make its assessments according to the letter of the rule. It should be noted also that EPA notified ADEQ of its intent to overfile and make 303(d) listings based on more than one exceedance of a chronic standard, given that this approach is consistent with federal guidance and is clearly spelled out in Arizona's own rule.

**Comment 26:** ADEQ's approach also ignores the requirement in Arizona's impaired water identification rule to use a "weight-of-evidence" approach when evaluating data for assessment purposes. ADEQ appears to be saying that it will list a segment as impaired if there are two excursions of chronic standards, based on grab sampling, no matter what any other data or evidence may show.

**Response 26:** ADEQ uses a weight of evidence approach for assessment based on the requirements of the Impaired Water Identification Rule (A.A.C. R-18-11-605(B)(1)), which says that the Department shall consider critical conditions, whether the impairment is persistent, seasonal, or recurring, and the quality of data. Given these considerations, ADEQ did not find other data or evidence to show that the surface waters in question were not impaired according to rule.

**Comment 27:** ADEQ's use of grab sampling to assess compliance with chronic standards also has the effect of rendering assessment with acute standards irrelevant. If ADEQ simply uses grab samples to assess compliance with chronic standards, there is no reason to even look at acute standards because such standards are typically less stringent. Consequently, because ADEQ is proposing to use the same approach for assessing acute and chronic standards, the chronic standards will inappropriately drive the assessment and impaired water listing programs.

**Response 27:** ADEQ will consider different approaches when revising the Impaired Water Identification Rule; however, the Department must make its current listings based on the requirements of the current rule.

**Comment 28:** ADEQ has suggested that EPA has required that it list waters based on grab sampling for chronic standards. These suggestions, however, are not consistent with EPA's 2004 Assessment Guidance (dated July 21, 2003). On page 30 of the guidance, EPA responded to a question regarding what statistical methods a state should use for assessing exceedances of criteria. In response to the question, EPA stated that "[i]f the state applies different decision rules for different types of pollutants (e.g., toxic, conventional, and non-conventional pollutants) and types of standards (e.g., acute and chronic standards for aquatic life or to protect human health), the state should provide a reasonable rationale supporting the choice of different approaches for different standards." EPA's response clearly envisions that states will and can apply different decision rules for different types of standards, such as acute and chronic, as was done in the Impaired Water Identification Rule. These statements only make sense. Acute and chronic criteria are based on different exposure assumptions and different decision rules for assessment purposes should apply.

**Response 28:** (See Response 27.)

**Comment 29:** Finally, as noted in Phelps Dodge's December 5, 2003 comments, contrary to ADEQ's proposed assessment approach, the language in A.A.C. R18-11-605(D)(2)(b), in combination with the language in A.A.C. R18-11-120(C), requires that there be more than one exceedance of the chronic standard (each exceedance is determined from the geometric mean of the analytical results of the last four samples taken at least 24 hours apart) if there are less than "20 spatially or temporally independent samples collected over three or more temporally independent sampling events." Accordingly, in order to determine whether a water body is impaired for a chronic aquatic and wildlife water quality standard if there are less than "20 spatially or temporally independent samples collected over three or more temporally independent sampling events," there must be at least two temporally independent sampling events, with each event consisting of at least four samples taken at least 24 hours apart. Without this information, the water body cannot be listed as impaired under the applicable state laws and rules. ADEQ should clarify this in the draft report and make appropriate changes to the proposed listings in the draft report to the extent that the listings are contrary to these provisions.

**Response 29:** (See Response 25.)

**Comment 30:** Boulder Creek (unnamed wash to Wilder Creek (AZ15030202-006B)), Boulder Creek (Wilder Creek to Copper Creek (AZ15030202-005A)), Butte Creek (headwaters to Boulder Creek (AZ15030202-163)), and Burro Creek (Boulder Creek to Black Canyon (AZ15030202-004)) should not be assessed as impaired for mercury based on the monitoring data listed in Table 5 and for other reasons discussed in more detail in the following paragraphs (many of these comments are contained also in our December 5, 2003 comment letter). As noted above, if there are less than 20 samples for a particular parameter, then a water can be assessed as impaired for chronic aquatic and wildlife water quality standards only if more than one exceedance of the standard is determined through the geometric mean of the analytical results of the last four samples taken at least 24 hours apart. In other words, at least eight samples are required. In contrast, Table 5 only shows that there were six qualifying samples for Boulder Creek (unnamed wash to Wilder Creek (AZ15030202-006B)), three qualifying samples for Boulder Creek (Wilder Creek to Copper Creek (AZ15030202-005A)), two qualifying events for Butte Creek (headwaters to Boulder Creek (AZ15030202-163)), and three qualifying samples for Burro Creek (Boulder Creek to Black Canyon (AZ15030202-004)). There also is no discussion in the draft report of the required calculation of the geometric mean of the last four samples taken at least 24 hours apart in order to determine whether one or more exceedances have occurred. The above-identified segments from the Bill Williams watershed clearly do not qualify for listing under Arizona's impaired water identification rule and should be identified as inconclusive with respect to chronic mercury.

**Response 30:** (See Response 25.)

**Comment 31:** Arizona's impaired water identification rule also provides that data is credible and relevant to an impaired water identification only when the monitoring entity has developed both a Quality Assurance Plan (QAP) and a Sampling and Analysis Plan (SAP) that contain certain elements. A.A.C. R18-11-602(A). The information relied upon with respect to listing the above-identified segments is data exclusively from Phelps Dodge Bagdad's instream monitoring program. While Phelps Dodge has developed a QA/QC plan for the data, it has not developed a sampling and analysis plan specific to mercury issues. The data is not credible and relevant as applied to the impairment assessment for mercury. This is especially true given the need for clean sampling procedures when conducting sampling for mercury concentrations in surface water and the disconnect between mercury concentrations in the water column and methylmercury concentrations in fish tissue.

**Response 31:** As stated in Phelps Dodge Response 10," Phelps Dodge Bagdad provided ADEQ a copy of its *Ambient Surface Water Monitoring Program*, dated March 1, 2002, revised March 6, 2002. In this document, both total recoverable mercury and dissolved mercury are listed in section 2.0 (Ambient Surface Water Analysis) as parameters to be sampled and analyzed. ADEQ determined that this document was sufficient to meet the credible data requirements of the Impaired Water Identification rule (A.A.C. R-18-11-602). The Impaired Water Identification Rule also permits ADEQ to use data gathered prior to the adoption of the rule that were collected without a QAP or SAP, provided the Department finds the data are credible and

scientifically defensible. Evidence needed to show data are credible is left to the discretion of ADEQ, but must meet the intent of A.A.C. R18-11-602.

The reference to clean sampling procedures is noted, but these procedures are not required for mercury data to be considered credible and scientifically defensible. ADEQ mercury samples collected from the Bill Williams watershed in 2003 using clean sampling methods produced mercury results at similar concentrations to the data provided by Phelps Dodge, and lend further support that Phelps Dodge's data were accurate and credible.

**Comment 32:** Additionally, more recent sampling conducted by ADEQ, using a mercury-specific QAP and SAP, in both Boulder and Burro creeks have indicated no impairment of the chronic mercury standard. The chronic mercury standard, in nanograms ("ng/l"), is 10 ng/l. The ADEQ sampling data, collected in May 2003, produced the following results: Boulder Creek (at Wild Horse Crossing) – no result (presumably because of lack of water in the creek); Boulder Creek (above the Hillside Mine) – 1.1 ng/l; Boulder Creek (at the Hillside Mine Adit) – 1.04 ng/l; Boulder Creek (below the Hillside Mine) – 1.71 ng/l; Boulder Creek (below Butte Creek) – no result (presumably because of lack of water in the creek); Boulder Creek (above Burro Creek) – 1.0 ng/l; Burro Creek (above Boulder Creek) – 1.41 ng/l; Burro Creek (at Six Mile Crossing) – 1.13 ng/l; and Burro Creek (at USGS Gage) – 0.567 ng/l. None of these recent clean sampling results from Boulder Creek and Burro Creek indicate any type of chronic mercury issue in these water segments. These segments clearly should not be listed under ADEQ's weight-of-evidence approach which requires that newer and more reliable data be given more weight and consideration when making assessment decisions (see A.A.C. R18-11-605(B)(c)).

**Response 32:** ADEQ did include more recent samples collected using clean sampling techniques. One of these, collected near the upper tailings pile on Boulder Creek, produced a result of 0.04 µg/L, or 40 ng/L, on Sept. 24, 2003. This exceedance was included in the report and contributed to the mercury listing on Boulder Creek, from Wilder to Copper Creek. The Impaired Water Identification Rule establishes that the Department shall weight newer measurements heavier than older measurements, unless the older measurements are more representative of critical flow conditions (A.A.C. R18-11-605(B)(1)(c)(i)). It is likely that the reason for many of the lower values mentioned above is that most of these samples were collected at or near base flow. ADEQ's investigation has shown that most of the exceedances occurring in this watershed are detected during and soon after precipitation events, which have been identified as a critical condition for these surface waters. The samples mentioned above by the commenter do not represent critical conditions.

**Comment 33:** Even more importantly, the water should not be listed as impaired because any identified mercury loadings clearly appear to be from naturally occurring conditions. As ADEQ is aware, Arizona's TMDL statute provides that ADEQ cannot list a water as impaired if pollutant loadings from naturally occurring conditions are sufficient to cause a violation of applicable surface water quality standards. A.R.S. 49-232(D). We have obtained data that ADEQ has produced in its recent studies of the watersheds that feed Alamo Lake. The data suggests that all of the watersheds potentially contain mercury levels in the water

column above the chronic standard. The data also suggests that the main contributor of mercury appears to be from natural springs as well as from the Santa Maria watershed. The ADEQ data further suggests that some of the lower concentrations of mercury throughout these three watersheds are associated with Burro Creek and Boulder Creek. This data clearly demonstrated that the presence of mercury in the water column throughout the Alamo Lake watershed is from naturally occurring conditions since the mercury levels appear to be present in virtually every water source sampled throughout the three main watersheds that feed into Alamo Lake.

**Response 33:** ADEQ agrees that where natural background alone exceeds water quality standards, a surface water would not be listed as impaired (A.R.S. § 49-232(D)). Even if some natural sources exist, further study is warranted to accurately determine what portion of the impairment is due to natural conditions alone versus anthropogenic activities. Once this is done, it may become necessary to develop site specific standards that consider natural background. Presently, the above-mentioned streams in the Bill Williams watershed must be assessed based on current water quality standards until sources, natural and/or anthropogenic, are identified.

**Comment 34:** Chapter IV, pp. 19-20 (Bill Williams Watershed): Consistent with the concerns expressed above, ADEQ should delete any language regarding adding mercury to the 303(d) List due to chronic mercury exceedances from the status summaries for Boulder Creek (unnamed wash to Wilder Creek), Boulder Creek (Wilder Creek to Copper Creek), Butte Creek (headwaters to Boulder Creek), and Burro Creek (Boulder Creek to Black Canyon).

**Response 34:** See Responses 25 through 33.)

**Comment 35:** Chapter V, Table 25 (303(d) List) & Chapter V, Table 31: As noted above, the proposed chronic mercury listings should be removed from Burro Creek, Butte Creek, and the two segments of Boulder Creek in the Bill Williams watershed. In addition, ADEQ should clarify (consistent with its recent assurances and changes to Chapter IV) that the copper and zinc listings for Boulder Creek are only for the segment from Wilder Creek to Butte Creek.

**Response 35:** (See "Responses 25 through 33" to address the chronic mercury listings comment.) ADEQ has added a note in Table 25 regarding copper and zinc in the final draft, similar to the comment in Table 31.

**Comment 36:** Chapter V, Table 31, page 44 (Priority Ranking for Mule Gulch): ADEQ agreed in response to Phelps Dodge comments on the 2002 303(d) List to identify Mule Gulch as medium priority. (Quote included from 8 A.A.R. 3493, Aug. 9, 2002). The priority designation for Mule Gulch should be changed from high priority back to the agreed-upon medium priority.

**Response 36:** ADEQ has corrected Table 31 and identified Mule Gulch as a medium priority, due to the length of time necessary for development of site specific standards (currently in process).

**Pima County Wastewater Management Department**

*First draft comments:*

**Comment 37:** We are understandably concerned that an inappropriate listing of this waterbody (Santa Cruz River) will greatly impact current operations and future planning for water, wastewater, storm water, environmental restoration, and habitat conservation efforts by the state, federal and local government activities in Pima County. Therefore, PCWWM respectfully request ADEQ to reconsider its tentative decision to place Santa Cruz stream segments on the Planning List based upon the following (see next five comments also):

The current Draft Report indicates segments of the Santa Cruz watershed assessed as; "inconclusive" and placed on the Planning List due to missing core parameters: *Escherichia coli*, pH, and dissolved metals (cadmium, copper, and zinc). This is a marked change in position from April 2003 in which dissolved oxygen was the only parameter discussed.

**Response 37:** Dissolved oxygen was the only parameter that EPA originally listed on the 2002 303(d) List for the Santa Cruz River, Cañada del Oro to Guild Wash. The reach was subsequently removed from the final List after submission of additional dissolved oxygen data by Pima County (long after ADEQ's request for data submittal) which showed no violations of the dissolved oxygen standard.

ADEQ believes the commenter is not clear about the difference between placing a surface water on the 303(d) List and placing a water on the Planning List due to lack of adequate information to make an assessment. ADEQ has reviewed the data and finds that placement on the Planning List is appropriate and no changes have been made. A minimum number and type of samples called the core parameters must be collected in order to make a full assessment of the stream reach (see core parameter discussion, Ch. III of the draft). Surface waters that are not impaired, but lack sufficient data to be assessed as attaining, are "inconclusive" and placed on the Planning List. In fact, the 2002 integrated report indicated that this reach was placed on the Planning List due to missing core parameters in Table 24, p. V-36 of Volume I.

**Comment 38:** PCWWM believes the Draft Report erroneously lists segments of the Santa Cruz waterbody as impaired based on a lack of available data, which is clearly not consistent with the Code. Pursuant to the listing criteria set forth under A.R.S. § 49-232 (B), at least 10 spatially or temporally independent samples collected over three or more temporally independent sampling events are required to be considered.

**Response 38:** ADEQ agrees that a 303(d) listing cannot be made based on a lack of available data. The only reach of the Santa Cruz River assessed as "impaired" and placed on the draft 2004 303(d) List was the reach extending from the Mexico border to Nogales WWTP. This reach is impaired due to *Escherichia coli* exceedances. The reaches cited by PCWWM have been placed on the Planning List. See further explanation of ADEQ's Planning List below in "Response 39."

**Comment 39:** According to A.A.C. R18-11-605(C): "When evaluating a surface water or segment for placement on the Planning List:

- a. Consider at least ten spatially or temporally independent samples collected over three or more temporally independent sampling events; and
- b. Determine numeric water quality standards exceedances.

Furthermore: "When there are less than ten samples, the Department shall place a surface water or segment on the Planning List, following subsection (B), if three or more temporally independent samples exceed the following surface water quality standards." (emphasis added)

PCWWM contends that neither of these criteria have been met in placing a number of segments on the Planning List including;

1. Santa Cruz River Roger Rd. WWTP outfall – Rillito Creek
2. Santa Cruz River Canada del Oro – HUC boundary
3. Santa Cruz River HUC boundary – Baumgartner Rd.

As a result, these stream reaches should be removed from the Planning List for impaired waters and more appropriately included in the 305(b) review of water quality assessments until such time as sufficient data becomes available for a definitive assessment.

**Response 39:** The commenter is correct that a surface water should be placed on the Planning List based on three exceedances out of ten samples (for the appropriate parameters). However, the Impaired Water Identification Rule also provides for placement on the Planning List when some monitoring data exist, but there are not enough samples to determine whether the surface water or segment is impaired or not attaining. This includes exceedance of a numeric water quality standard, but not enough samples or sampling events to make an assessment of impaired (A.A.C. R18-11-604(D)(2)(c)). Therefore ADEQ has the ability to place a surface water on the Planning List based one or more exceedances with no minimum sample size if an assessment of attaining cannot be made (therefore the water is inconclusive). The Santa Cruz River, Cañada del Oro to HUC boundary 15050303, was placed on the Planning due to a chlorine exceedance.

ADEQ acknowledges that there is some confusion over the term "Planning List." Arizona's Impaired Water Identification Rule was developed prior to EPA's final guidance on the Integrated Report, which establishes a framework to track all waters by placing them in one of five categories. The Planning List established in the Impaired Water Identification Rule might better be called ADEQ's "targeted list" for waters where exceedances were found, because the rule and the Department's monitoring strategy clearly prioritize these waters for further investigation. Other waters where there is insufficient information would then be on the internal "Planning List" and addressed during the next watershed rotation cycle. ADEQ has added clarification within the report at the beginning of Chapter IV. The other two reaches mentioned above were placed on ADEQ's internal Planning List due to missing core parameters (see Response 37).

Additionally, Pima County refers to the "Planning List for impaired waters." It should be noted that all surface waters on the Planning List, including the three stream reaches mentioned above, were assessed as "inconclusive" or "attaining some uses," and not "impaired" as the comment suggests. The reaches will remain on ADEQ's Planning List for further investigation.

**Comment 40:** Included in this submittal you will find additional data compiled by PCWWM demonstrating no exceedances of water quality standards for the parameters identified. *Escherichia coli* is not included in this submittal as this test method has only recently been accepted by ADHS for wastewater monitoring and therefore historical data is not available.

**Response 40:** ADEQ contacted PCWWM by phone early in 2003 requesting all ambient surface water data collected within the five-year assessment period. Dissolved oxygen results were the only data provided. The additional data were not provided until after completion of the draft report.

The assessment process is a year-long project which includes manually analyzing data, entering all assessment results into EPA's database, calculating statewide assessment statistics, creating maps, and putting together the final product – the 305(b) Assessment Report. ADEQ must therefore establish and adhere to timeframes for data submittal in order to meet EPA's required date for completion of the final report. ADEQ will review and include the newer data in the 2006 assessment if credible data requirements are fulfilled. The data cannot be included in the 2004 report at this point, especially given that a 303(d) listing is not in question.

**Comment 41:** PCWWM would like clarification regarding the reported chlorine exceedances identified within the Canada del Oro - HUC boundary segment. The comment states

“ADEQ and Pima County collected a total of 14 samples at 6 sites in 2001.

Assessed as “attaining some uses” and placed on the Planning List due to chlorine exceedance.”

PCWWM is unaware of any chlorine monitoring within the stream. Given the stated concentrations of 0-480 ug/L it is possible that these parameters have been falsely identified and require further investigation. PCWWM would like the opportunity to review the data submitted for the chlorine determination.

**Response 41:** ADEQ has an ambient monitoring site (site SCSCR025.40) on this reach near Marana. Two chlorine samples, one of which exceeded water quality standards, were collected at the site in 2001, as indicated in the draft report. ADEQ has provided a copy of the chlorine data (faxed 2/13/04). Chlorine can have acutely toxic effects on aquatic life; therefore, the exceedance is sufficient to place the segment on the Planning List for further investigation.

**Comment 42:** Furthermore, the chlorine concentration of 11 ug/L for acute and 5 ug/L for chronic are not consistent with EPA's Goldbook entitled *Quality Criteria for Water 1986* which is the cited reference for ADEQ Water Quality Standards involving acute and chronic toxicity. The appropriate water quality criteria identified within this reference are 19 ug/L for acute and 11 ug/L for chronic.

**Response 42:** The comment is outside the scope of this report. Opportunity for public comment is provided during each triennial review of the surface water quality standards. The next triennial review will begin in July 2004. Assessments made in the 305(b)/303(d) integrated report must be based on current water quality standards.

**Comment 43:** Given the impact and consequences associated with an erroneous listing of a stream segment as impaired, perhaps a pro-active baseline study conducted in conjunction with ADEQ and PCWWM might permit a more comprehensive and cost effective evaluation of the affected segments. The Santa Cruz stream segment proposed by the Draft Report is not impaired since the existing, and readily available data, indicates that water quality standards have not been exceeded and are consistent in attaining the designated

uses of the identified segments. Thank you for your careful consideration of these efforts to properly characterize the Santa Cruz stream segments and remove them from the Planning List.

**Response 43:** ADEQ is open to discussion and comment regarding future monitoring on the Santa Cruz River. The purpose of the ambient monitoring site near Marana mentioned in "Response 41" is to monitor "baseline" (ambient) water quality. Four full suites of samples were collected during the assessment period, from 1998-2002.

The commenter is correct that the Santa Cruz River reaches mentioned in "Comment 39" are not impaired. The draft report shows all three reaches to be inconclusive or attaining some uses. The reach from Cañada del Oro to HUC boundary 15050303 is attaining some uses due to a chlorine exceedance. The other two reaches, Roger Road WWTP outfall to Rillito Creek and HUC boundary 15050303 to Baumgartner Road, are inconclusive due to missing core parameters. The reaches will remain on ADEQ's Planning Lists (see Response 39) until sufficient data have been collected to make an assessment of attaining or impaired. As noted in "Response 37," there is some apparent confusion over the differences between the 303(d) List, the official Planning List, and the internal prioritization of waters for further investigation.

ADEQ did not have sufficient data when assessments were made to determine that the stream reaches are attaining all designated uses. The additional data provided by Pima County at the end of the comment period were not provided upon request in the spring of 2003 and therefore not readily available (see Response 40). The data will be reviewed and included in the 2006 report if credible data requirements are fulfilled.

#### **Pima County Wastewater Management Department**

##### ***Second draft comments:***

**Comment 44:** The current Draft Report indicates segments of the Santa Cruz watershed assessed as "...inconclusive" and placed on the Planning List due to missing core parameters."

Unfortunately, the above statements are incorrect, as these parameters were made available to ADEQ. Dissolved metals were submitted to ADEQ on December 4, 2003 (see attachment). Data for daily pH analysis from the Ina Road WPCF and Roger Road WWTP are submitted to ADEQ monthly via DMRs, and should suffice to keep these segments of the Santa Cruz River off of the Planning List. Since ADEQ is ultimately responsible for collection of data, and has chosen not to include data submitted by PCWWM in our letter of December 4, 2003 and via DMRs, lack of data should not constitute placement on the Planning List.

**Response 44:** As stated in "Response 40," ADEQ contacted PCWWM by phone early in 2003 requesting all ambient surface water data collected within the five-year assessment period. Dissolved oxygen results were the only data provided. The additional data were not provided until after completion of the draft report. It is not clear whether the discharge monitoring report (DMR) data the commenter mentions are ambient data. DMR data submitted to ADEQ are usually effluent data. Regardless, the pH data were not submitted nor mentioned upon request, and there were several other core parameters missing in addition to pH.

The assessment process is a year-long project which includes manually analyzing data, entering all assessment results into EPA's database, calculating statewide assessment statistics, creating maps, and putting together the final product – the 305(b) Assessment Report. ADEQ must therefore establish timeframes for data

submittal in order to meet EPA's required date for completion of the final report. ADEQ will review and include the data in the 2006 assessment if credible data requirements are fulfilled. The data cannot be included in the 2004 report at this point, especially given that a 303(d) listing is not in question.

**Comment 45:** *Escherichia coli* is not included in this submittal as this test method has only recently been accepted by ADHS for wastewater monitoring.... Unfortunately, ADEQ and natural conditions render analysis of this in-stream parameter meaningless for the following reasons:

- Effluent-dependent waters create important riparian areas for bird and wildlife populations in water-starved areas. Wildlife will add considerable *E. coli* loading to the water body.
- CAFOs and miscellaneous livestock inhabit these riparian areas, thus contributing significant *E. coli* loading to the water body.
- Arizona's hot summers and warm spring and fall seasons keep water temperatures high enough to prolong pathogen viability and may even allow for growth of some pathogenic organisms.
- Arizona's current WQSs for residual chlorine for A&Wedw are 11 and 5 ug/L, acute and chronic. Without a measurable residual chlorine concentration in effluent-dependent ecosystems, potential pathogens like *E. coli* are able to self-repair chlorine damage and return to a viable probability of survival and spread of pathogens indigenous to the effluent dominated environment.
- Section VI-14 of the Draft Report shows the miles of streams impaired due to point and non-point sources of pollution. Only six miles of streams could be attributed to point source pollution, but 735 were due to non-point source.

ADEQ states in IV-2 that criteria to remove a water body from the 303(d) List include pollution loadings from naturally occurring conditions. The above items fit the description of 'naturally occurring' simply because they are beyond the scope of point source control.

**Response 45:** It should first be noted that there are no reaches of the Santa Cruz in Pima County on the Planning List or the 303(d) List for *E. coli* exceedances. It is true that some amount of *E. coli* in surface water is natural, originating from birds and wildlife. However, there are various human-caused sources of elevated *E. coli* levels in surface waters, including septic systems, pet waste, and effluent from wastewater treatment plants. If studies have been conducted which prove that a pollutant is present due to natural sources alone, then a surface water would not be placed on the 303(d) List. If such studies do not exist, then a surface water not meeting standards must be placed on the 303(d) List in accordance with the requirements of the Impaired Water Identification Rule. Determination of pollutant sources, natural and human-caused, is part of the TMDL process that follows. It is often the case that natural sources contribute some, but not all, loading of pollutants to a surface water. Regarding point versus nonpoint sources, Arizona's surface water quality standards apply to all waters of the U.S., regardless of any suspected point or nonpoint source contribution, and include *E. coli* standards for effluent-dependent waters.

**Comment 46:** The 2004 report is the first to use chronic standards for A&W (Aquatic and Wildlife). A surface water is assessed as impaired if more than one exceedance occurs. Obviously, the importance of

validating data by the use of statistical analysis has been overlooked. Chronic WQS limits are typically at or below the detection level of instrumentation used for analysis. As a result, validation of data by acquisition of an appropriate sample number, strict QA/QC including replicate samples and analyses, and statistical analysis are a necessity. The lower the WQS concentration, the more important method and statistical validation becomes, despite the claim to the opposite in this report.

**Response 46:** The 2004 report is the first to assess chronic Aquatic and Wildlife standards using the Impaired Water Identification Rule (A.A.C. R18-11-605(D)(2)(b)). In accordance with the rule, a surface water is assessed as "impaired" if more than one exceedance of an Aquatic and Wildlife chronic water quality standard occurs. Although a geometric mean of the last four samples must be taken to apply the standard for enforcement purposes (A.A.C. R18-11-120), the Impaired Water Identification Rule requires only two exceedances to be placed on the 303(d) List, with no minimum sample size. This is one of several exceptions, or "off-ramps," to the binomial approach for statistical evaluation which requires a minimum sample size. These exceptions include chronic standards and other parameters considered to be toxic pollutants.

The credible data requirements of the Impaired Water Identification Rule, including the QA/QC requirements, apply to all data used for assessment, including data used to evaluate chronic water quality standards. Water quality results with detection limits higher than the applicable chronic standard could not be used for assessment.

**Comment 47:** PCWWM respectfully submits that the current listing procedures require communities to develop and submit concurrent in-stream sampling data due to the lack of data developed by the state. This becomes more critical due to ADEQ's past acceptance of third party data in which field procedure, location and date cannot be verified. Despite the acceptance of this unverifiable data, valid data submitted to ADEQ on December 4, 2003, was not included within the data set for the revised 303(d) List. This data includes dissolved metals analyses for numerous sample sites in the affected areas of the Santa Cruz River.

**Response 47:** Listing procedures do not require communities to submit data. The Impaired Water Identification Rule establishes credible data requirements for both ADEQ and for any outside parties interested in submitting data to be used for assessment. This rule also requires submittal of a sample plan and quality assurance plan that include field procedures, locations and dates.

As stated in "Response 44," ADEQ must establish timeframes for data submittal in order to meet EPA's required date for completion of the final report. Data were requested from PCWWM early in 2003, but dissolved oxygen results were the only data submitted. ADEQ will review and include the data in the 2006 assessment if credible data requirements are fulfilled. The data cannot be included in the 2004 report at this point, especially given that a 303(d) listing is not in question.

**Comment 48:** PCWWM would like to respond to the reported chlorine concentrations and add clarification for the data identified within the Canada del Oro – HUC boundary segment. The comment states: *"ADEQ and Pima County collected a total of 14 samples at 6 sites in 2001. Assessed as 'attaining some uses' and placed on the Planning List due to chlorine exceedance."*

Chlorine analyses are subject to numerous interferences, which can result in inaccurate results. These include turbidity, color, metals, certain organic compounds, etc., and must be either removed prior to analysis, or corrected for during analysis. A review of the 2001 ADEQ STORET dataset for the chlorine values in question revealed turbidity measurements in the range of 13 – 15.3 NTU. It is without a doubt that this level of turbidity would make a titration endpoint determination impossible, and would certainly absorb and scatter light using a spectrophotometric method. Therefore it is our conclusion that the reported data is invalid.

**Response 48:** ADEQ has contacted the Hach Company, which produces the colorimeter used for this analysis. According to a representative from Hach Technical Support, "the turbidity values should be less than 20 for the reading to maintain its integrity." The turbidity value obtained along with the chlorine result in question was 15.3 NTU; therefore, the chlorine exceedance is valid. In any case, this reach has not been listed as impaired, but has simply been placed on the Planning List for further monitoring.

**Comment 49:** In regard to chlorine concentrations downstream of the Roger Road WWTP and Ina Road WPCF, it is pertinent to realize that in the time period from November 2, 1999 through 2003, PCWWM was conducting an evaluation of automated chlorination-dechlorination systems as a means of determination of the lowest practical residual chlorine concentration. These studies were required by EPA and ADEQ as part of the NPDES permits for these facilities, and necessitated raising the NPDES permit limit for chlorine to 0.5 mg/L during this period of time. This must be considered prior to placing any Santa Cruz River segment downstream of either of these facilities on the Planning List. The measurement of one chlorine residual sample, still within the permit limitations for both Ina WPCF and RRWWTP, does not merit listing the segment for chlorine standards.

**Response 49:** Arizona's surface water quality standards apply to all surface waters of the State, as defined in rule (A.A.C. R18-11-101(43)). These standards are not related to permit limitations for effluent. Therefore any changes in permit limitations do not change the surface water quality standards. The segment will remain on the Planning List for further monitoring.

**Comment 50:** The chlorine concentration of 11 µg/L for acute and 5 µg/L for chronic are not consistent with EPA's Goldbook entitled *Quality Criteria for Water* 1986 which is the cited reference for ADEQ Water Quality Standards involving acute and chronic toxicity. The appropriate water quality criteria identified within this reference are 19 µg/L for acute and 11 µg/L for chronic. Furthermore, this EPA chlorine document lacks a comprehensive data base upon which these numbers were derived, and utilized methodologies inappropriate for current standards. PCWWM believes realistic chlorine standards still need to be developed for Arizona, and asks for an opportunity to review the data submitted for the WQS chlorine limit determination.

**Response 50:** As stated in PCWWM "Response 42," the comment is outside the scope of this report. Opportunity for public comment is provided during each triennial review of the surface water quality standards. The next triennial review will begin in July 2004. Assessments made in the 305(b)/303(d) Integrated Report must be based on current water quality standards.

**Comment 51:** Given the impact and consequences associated with an erroneous listing of a stream segment as impaired, the inappropriate listing of the Santa Cruz River at Canada del Oro for 2003 and again in 2004, the only valid conclusion at this time is the Santa Cruz stream segment proposed by the Draft Report is not impaired. The existing, and readily available data indicates that water quality standards have not been exceeded and are consistent in attaining the designated uses of the identified segments.

**Response 51:** This reach of the Santa Cruz River has not been listed as impaired. It has been placed on the Planning List for further monitoring due to a valid chlorine exceedance.

#### **City of Phoenix**

##### ***First draft comments:***

**Comment 52:** The City of Phoenix (the City) is limiting comments at this time to the decision and rationale for placing the segment of the Salt River from the 23<sup>rd</sup> Avenue WWTP to the Gila River confluence on the 303(d) List of impaired waters (for DDT metabolites, toxaphene and chordane in fish tissue).

EPA ignored its own guidelines in rushing to put this segment on Arizona's 2002 303(d) List as an impaired water. ...the data (pre-1999) it used to support the advisory did not comply with the guidance provided in its very own October 24, 2000 memorandum from Geoffrey H. Grubbs and Robert H. Wayland, III, regarding the use of fish-consumption advisories. That guidance explicitly states:

*For purposes of determining whether a waterbody is impaired and should be included on a section 303(d) List, EPA considers a fish or shellfish consumption advisory, a NSSP classification, and the supporting data, to be existing and readily available data and information that demonstrates non-attainment of a section 101(a) "fishable" use when:*

- 1. The advisory is based on fish and shellfish tissue data,*
- 2. A lower than "Approved" NSSP classification is based on water column and shellfish tissue data (and this is not a precautionary "Prohibited" classification or the state water quality standard does not identify lower than "Approved" as attainment of the standard),*
- 3. The data are collected from the specific waterbody in question, and*
- 4. The risk assessment parameters (e.g. toxicity, risk level, exposure duration and consumption rate) of the advisory or classification are cumulatively equal to or less protective than those in the State, Territory, or authorized Tribal water quality standards.*

The City steadfastly contends that EPA did not comply with Conditions 3 and 4 in listing the Salt River on the basis that a fish-consumption advisory existed. AS noted above, and contrary to EPA's statement in their February 27, 2003 letter, Condition 3 was not met because data was not collected from the specific waterbody in question I EPA chose to rely on the 1991 ADHS report, *Risk Assessment For Recreational Usage Of The Painted Rocks Borrow Pit Lake At Gila Bend, Arizona*, Condition 3 is still not met because the data used for the risk assessment were specific to the Painted Rocks Borrow Pit Lake. The risk assessment did not include data from the Salt River. Therefore, the fish-consumption advisory cannot be used to list the Salt River because the data used to conduct the risk assessment were not collected from this specific waterbody.

Condition 4 obviously could not have been met because there was no risk assessment done for the listed segment nor has EPA or ADEQ defined the risk assessment parameters used for the fish-consumption advisory. Based on the 1991 ADHS report, it appears that the risk assessment parameters are cumulatively more protective than those used to develop the Arizona Surface Water Quality Standards. Therefore, according to Condition 4, the fish-consumption advisory cannot be used to list a water as impaired.

**Response 52:** As discussed below, ADEQ believes that fish consumption advisories issued by the agency meet the intent and requirements of the Grubbs & Wayland memo. While a targeted risk assessment has not been done on the reach of the Salt River between 23<sup>rd</sup> Avenue and the confluence with the Gila River, an assessment has been completed for the reach of the Gila River immediately downstream (see "A fish consumption advisory investigation for the Middle Gila River, Patterns and Trends," Rector 2000). Actual data have been gathered by the U.S. Fish and Wildlife Service (USFWS) within the Salt River below 23<sup>rd</sup> Avenue and using the fish tissue results from this sampling compared to the risk assessment results of the downstream reach, an extrapolation of the fish advisory to this upstream segment is warranted.

In 1994, five medium to large carp were taken from the Salt River at 107<sup>th</sup> Avenue (below the Gila River confluence) by ADEQ and the Arizona Game and Fish Department (Rector 1995). An analysis of a composite of all five fish showed a DDE concentration of 210 µg/Kg. This concentration is greater than the geometric mean concentration for all sites found in Rector (2000) and used in that risk assessment. Also, the concentration of DDE found in the USFWS study (King et al. 1997) at 59<sup>th</sup> Avenue (segment from 23<sup>rd</sup> Avenue to the Gila River confluence) was also greater than the geometric mean found in the 2000 study (0.32 mg/Kg for all fish [N=11]), 0.31 mg/Kg for common carp [N=5], 0.29 mg/Kg for largemouth bass [N=5] and 0.47 for channel catfish [N=1]).

Using a cancer oral slope factor of  $(0.34 \text{ mg/Kg-d})^{-1}$  (IRIS 2000) and a one in a million ( $10^{-6}$ ) allowable risk level, the same risk assessment parameters used in developing Arizona's surface water quality standards, the calculated consumption rates based on the two studies are shown in the table below:

Study	Oral Slope Factor (mg/Kg-d) <sup>-1</sup>	Risk Level	Consumption Rate (g/day)		Ratio whole: fillet (1.59:1.0) (g/day)	
1994	0.34	$1 \times 10^{-6}$	72 kg adult	1.0	72 kg adult	1.6
			36 kg 9-12 yr child	0.5	36 kg 9-12 yr child	0.8
			17.4 kg 3-6 yr child	0.25	17.4 kg 3-6 yr child	0.4
1997	0.34	$1 \times 10^{-6}$	72 kg adult	0.7	72 kg adult	1.11
			36 kg 9-12 yr child	0.3	36 kg 9-12 yr child	0.48
			17.4 kg 3-6 yr child	0.2	17.4 kg 3-6 yr child	0.32

While data from Rector (1995) and King et al. (1997) are derived from the analysis of whole fish rather than filets, Amrhein et al. (1999) found that for PCBs (also lipophylic organochlorines) an average ratio

of 1.59: one was found for whole body tissue residues of PCBs in comparison to filets. Using this ratio as a surrogate, the calculated consumption rates for are shown in the table in the far right column.

All of these calculated consumption rates are well below national consumption rate of 6.5 grams per day, used in developing surface water quality standards, which indicates a higher level of risk. Based on these data, a fish consumption advisory must be issued.

EPA's Integrated Risk information System classifies DDE as a B2 or probable human carcinogen based on evidence of the increased incidence of liver tumors in mice. Although human epidemiological data are not available for DDE, there is autopsy evidence relating the presence of DDT, a structural analog of DDE, to incidences of cancer. Several National Institute of Environmental Health Sciences studies have also linked DDT to preterm births in humans in the US and several studies have correlated DDT exposure with liver lesions in weanling rats.

The Salt River through the Phoenix metropolitan area is a unique waterbody when compared to others in Arizona. While no actual fish consumption data are available, this reach of the Salt River is most probably one of very few areas in Arizona where subsistence consumption is likely to occur. A report prepared by the EPA and Toxicology Excellence for Risk Assessment (TERA) identified low income urban anglers as "a group that may be at higher risk of exposure to fish-borne contaminants." Low income populations, including immigrant populations, are more likely to supplement protein intake by eating locally caught fish. An Arizona State University study (Rex et al. 2000) indicated significant areas of extreme poverty in the area of the Salt River in the Central and Southwest Phoenix metropolitan area. Also, a significant population of homeless individuals and families live in and around the Salt River. Given the significant areas of extreme poverty along the Salt River in the Phoenix metropolitan area, ADEQ believes it is important to address the probability of the consumption of contaminated fish as both a public health issue and as a matter of environmental justice.

**Comment 53:** Accordingly, we request that ADEQ identify the basis of the state's authority for issuing fish-consumption advisories and the corresponding rules or statutes. We request ADEQ to conduct the data collection and analysis necessary to ascertain the attendant risks of consuming fish from this segment of the Salt River. We also request that ADEQ submit to EPA all data and reports pertaining to the designation of the fish-consumption advisory currently being applied to this segment with a request for them to reevaluate their listing decision in view of the applicable data and its quality while appropriately applying the EPA guidance on fish-consumption advisories.

**Response 53:** The Arizona Department of Environmental Quality derives its authority to declare and maintain fish consumption advisories under the Clean Water Act "fishable-swimmable" goals through the application of the narrative toxics standard found at R18-11-108 (A)(5) which states: "A surface water shall be free from pollutants in amounts or combinations that....are toxic to humans, animals, plants, or other organisms."

ADEQ has conducted the data collection and analysis necessary for the fish consumption advisory, as explained in Response 52" above. ADEQ provides all data and reports in support of narrative standards evaluations (e.g. tissue, sediment, geomorphological data) to EPA when it submits the Integrated Report. As

ADEQ is still developing narrative implementation procedures for use of narrative surface water quality standards, the Department is precluded from listing a surface water based on evidence that suggests violation of narrative standards; however, in 2002, EPA reviewed all such data and chose to list this segment of the Salt River as impaired. The segment remains on the draft 2004 303(d) List.

**City of Phoenix**

***Second draft comments:***

(Comments from first draft resubmitted. (See Comments and Responses 52 and 53. above.)

**Pima Association of Governments**

***Second draft comments:***

**Comment 54:** Thank you for the opportunity to review ADEQ's February 2004 draft *Status of Water Quality in Arizona 305(b) Assessment Report*. The report contains a wealth of information, and is organized in a logical, user-friendly fashion. It is a tremendous resource for water quality research and planning.

**Response 54:** ADEQ appreciates the comment.

**Comment 55:** This report is of particular importance in Pima County, where we are endeavoring to conserve and restore our aquatic and riparian environments as part of the Sonoran Desert Conservation Plan (SDCP). In 2002, the Pima Association of Governments (PAG) Watershed Planning Program prepared a report (attached) for the SDCP on the water quality of priority streams identified in our region. Working with Pima County and other agencies, we identified twenty priority streams to assess. The selection of priority streams was based primarily on the presence of perennial or intermittent stream flow, the area of riparian habitat, the presence of surface water sources and possible wildlife corridors. Of the twenty priority perennial and/or intermittent streams we identified, we recommended that the following receive the highest priority for further investigation and monitoring due to lack of data: Agua Verde Creek, Davidson Canyon, Empire Gulch, Espiritu Canyon, Florida Canyon, Mattie Canyon, Rincon Creek, Wakefield Canyon.

It would be very beneficial if ADEQ could expand or otherwise adjust its water quality monitoring program in the Santa Cruz River and San Pedro River watersheds to include as many of these eight streams as possible. I would like to meet with you and/or other appropriate ADEQ staff to discuss how this could be accomplished and whether it is feasible to expand the state's monitoring program between now and the time that ADEQ issues its next 305(b) assessment. It might be possible for us to work together and with other agencies to obtain water quality data for most, if not all, of the highest priority streams identified in the Sonoran Desert Conservation Plan. We might be able to conduct some of the monitoring locally. If so, we would appreciate guidance on what we would need to do to ensure that any data we collect will meet the quality assurance requirements for the 305(b) report.

**Response 55:** ADEQ very much appreciates PAG's interest in water quality and in gathering more data. Unfortunately, due to budget constraints, the Department has the ability to monitor a very limited number of surface waters throughout the state. ADEQ would welcome any data that PAG is able to collect.

**Comment 56:** The Pima Association of Governments (PAG) requests that ADEQ not include Lakeside Lake (AZL15050302-0760, Santa Cruz watershed) in the list of impaired waters to be submitted to the USEPA, unless more recent data are reviewed and found to support the state's findings.

Lakeside Lake is an artificial urban lake in Tucson historically dependent on delivery of reclaimed wastewater supplemented by impoundment of infrequent storm flows. The February 2004 draft of *Arizona's Integrated 305(b) Assessment and 303(d) Listing Report* indicates that ADEQ is adding Lakeside to the 303(d) List because 4 of 33 ammonia samples and 16 of 55 dissolved oxygen samples collected between 1998 and 2002 failed to meet the water quality standards assigned to the lake. However, significant physical alterations have been made to the lake since the majority of the failing samples were collected.

Arizona Revised Statutes governing data requirements for listing of impaired waters state that ADEQ shall consider only reasonably current and scientifically defensible data in developing the 303(d) List. The City of Tucson installed a state-of-the-art aeration system at Lakeside Lake in June of 2002 to improve water quality. Since that time, there have been no reported fish kills; and, after some initial difficulties, the system is working well.

ADEQ apparently based its decision to list Lakeside largely on data collected before the aeration system began operation, because the November 2003 report references no data collected during 2003, when the new system was operational. Given that the lake is now being aerated with a new system, the data used for the 305(b)/303(d) assessment should no longer be considered current, and it is inappropriate to list the water as impaired.

A logical and scientifically defensible alternative is to closely monitor the lake to determine the effectiveness of the aeration system in correcting eutrophic conditions in the lake, and report these data in the next 305(b) report. It is premature to assign an impaired designation because the data are not based on current conditions at the lake.

R18-11-605(B)(1) requires ADEQ to weight high quality data (newer data) over lower quality data (older data). R18-11-602(A)(1)(c) also requires that the samples be representative of the water quality conditions of the water, and that they be reproducible. The older data cannot be reproduced, and it does not represent the water quality in the lake since the installation of the state-of-the-art aeration system.

**Response 56:** ADEQ has reviewed the 2003 data. Although water quality has shown some improvement, a significant number of dissolved oxygen and ammonia violations still occurred. The lake remains on the 2004 303(d) List. The TMDL is scheduled for completion in 2004.

**Comment 57:** PAG is concerned about this listing because it could have significant unintended negative consequences for our region. Lakeside Lake is a valuable resource; it was constructed to create an urban oasis and "put-and-take" fishing opportunities in a desert city. However, if Lakeside is incorrectly listed as impaired after an aeration system has already been installed, our region will be forced to "correct" a problem that is well on its way towards resolution. We will be faced with difficult choices, including possibly removing the lake. But this is undesirable, because the lake is such a popular fishing spot.

It is hard to imagine that removing the lake is what Congress intended when it passed the Clean Water Act, and we doubt that this is what ADEQ desires. An additional potential unintended consequence of this listing is the needless complication of stormwater discharge permitting for activities occurring in the upstream watershed. This could have significant economic implications, yet to our knowledge no one has demonstrated that it would benefit the fish in the lake.

**Response 57:** The purpose of making a 303(d) listing is indeed to benefit fish and other wildlife which rely on the impaired surface water. Part of TMDL development and implementation is identification of the sources causing impairment and recommendations for management practices that can improve the water quality so that the surface water is once again supporting its designated uses. Closure of the lake is certainly not the only option for resolving the problems.

**Comment 58:** ADEQ should consider adopting site specific standards for the lake or assigning the lake a more appropriate designated use that accounts for the existing conditions at the lake, which is used as an urban fishery, and which is supplied by storm water and – for the last 13 years – supplemental discharges of reclaimed water.

**Response 58:** The comment is outside the scope of the report. Opportunity for public comment is provided during each triennial review of the water quality standards (including designated uses). The next triennial review will begin in July 2004. More appropriate designated uses may also be considered during development of the TMDL, but must still be reassigned through a public process during the triennial review. Assessments made in the 305(b)/303(d) Integrated Report must be based on current water quality standards.

#### **City of Tucson, Department of Transportation**

##### ***Second draft Comments:***

**Comment 59:** The City of Tucson, Department of Transportation requests that ADEQ not include Lakeside Lake (AZL15050302-0760, Santa Cruz watershed) in the list of impaired waters to submitted to the USEPA. The City of Tucson has taken significant steps to aggressively manage the Lake's water quality, including the installation of aeration system in 2001, which appears to be effectively addressing hyper-eutrophic conditions of the Lake.

The majority of the data utilized to list Lakeside Lake were collected prior to the installation of this aeration system. Because the aeration system has significantly improved the lake chemistry, it would be more appropriate to utilize data collected after the aeration unit was installed. Data requirements for listing of impaired waters include the use of "reasonably current" and "scientifically defensible data."

**Response 59:** (See Response 56 above.)

**Comment 60:** In addition, ADEQ should consider whether the Lake was correctly designated. Lakeside Lake has received reclaimed water discharges for approximately 13 years, which predates the

classification of the lake as an Urban Lake with and Aquatic and Wildlife warm-water fishery designation. If the lake was incorrectly designated, it is likely that the Lake could be inappropriately listed as impaired.

**Response 60:** (See Response 58.)

#### **U.S. Environmental Protection Agency (EPA)**

##### ***First draft comments:***

**Comment 61:** Retention of Previously Listed Waters: We support the proposed decision to retain on the 303(d) List the waters and pollutants added to the List by EPA in 2002. It appears that available data and information continue to support the inclusion of these waters on the 2004 List.

**Response 61:** ADEQ's decision to retain the waters on the 2004 303(d) List is consistent with Arizona's Impaired Water Identification Rule.

**Comment 62:** Application of Narrative Water Quality Standards: We understand the state's view that state law bars the Department from applying narrative water quality standards for assessment purposes absent adopted implementation procedures. However, federal regulations require the assessment of whether waters are attaining all applicable standards including narrative standards (40 CFR 130.7(b)(3)). If the state is unable to evaluate potential exceedances of narrative standards (e.g., in cases where consumption advisories are in effect or where sediment, fish tissue, or biological data and information indicate that narrative standards are not attained), it appears EPA will need to conduct this evaluation and, if necessary, add waters to Arizona's 303(d) List due to narrative standards exceedances.

For example, there are several waters for which consumption advisories are in place for several waters due to the presence of toxic pollutants in resident fish or other aquatic species. As you recall, EPA added to Arizona's 2002 list several waters with consumption advisories. We note that consumption advisories have been issued for several additional lakes in Arizona since 2002 (including Long Lake, Lyman Lake, Soldiers Lake, Soldiers Annex Lake, and Parker Canyon Lake for mercury), and these waters appear to meet federal listing requirements. If the state is unable to include them on its 303(d) List, EPA will likely have to add them.

**Response 62:** ADEQ agrees that state law bars the Department from applying narrative water quality standards for assessment purposes without first adopting implementation procedures. ADEQ is in the process of developing these implementation procedures. The Department is aware of and has noted these waters in an effort to keep the public informed of probable changes to the 2004 303(d) List.

**Comment 63:** Assessments of Waters Which Do Not Meet Minimum Sample Size Requirements: In its decision on the 2002 List, EPA found that the state had not provided a valid technical rationale in support of its use of minimum samples size requirements as a precondition for assessing attainment of most water quality standards (see EPA's decision letter dated December 5, 2002). EPA disapproved the state's decision not to list several waters because EPA found that sufficient data were available to support clear conclusions that applicable numeric water quality standards were exceeded. EPA added these waters and pollutants to the state's final 2002 List.

We repeat our concern that the state's proposed application of minimum sample size requirements is inconsistent with federal listing requirements. We understand that the Department's ability to change its listing methodology is limited due to state regulatory provisions; however, EPA will carefully review situations where waters were not listed due to minimum sample size considerations and take decisions to add these waters and pollutants to the list if warranted.

**Response 63:** ADEQ agrees that changes in listing methodology must be made through the state rulemaking process. As stated in "Response 62," ADEQ has reexamined surface water quality standards, the Impaired Water Identification Rule, and federal listing guidance and has revised its listing methodology for chronic standards to be consistent with all three (see Response 6 for explanation). ADEQ released a second draft report for public comment, which included changes in chronic assessment methodology.

**Comment 64:** Assessment of Chronic Standards for Toxic Pollutants: The proposed listing decisions incorporate a new procedure for assessing compliance with chronic water quality standards for toxicants (Chapter III, p. 11). We understand that these assessment provisions are based on the state's application of the recently approved chronic for toxic chemicals (R18-11-120.C).

It appears that the proposed assessment methodology is inconsistent with the new state standard for chronic toxicants and with federal listing guidance (*Guidance for 2004 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d) and 305(b) of the Clean Water Act*, EPA, July 21, 2003, *Consolidated Assessment and Listing Methodology*, EPA, July 2002). The listing report provides no rationale to support the proposed methodology. EPA strongly recommends that the state revise its assessment methodology for chronic toxicants (and associated assessment decisions) to be consistent with the applicable standards and with federal assessment guidance.

**Response 64:** ADEQ has reexamined surface water quality standards, the Impaired Water Identification Rule, and federal listing guidance and has revised its listing methodology for chronic standards to be consistent with all three (see Response 6 for explanation). ADEQ released a second draft report for public comment which included changes in chronic assessment methodology.

**Comment 65:** Application of 10% Exceedance Rate and Binomial Tests for Conventional Pollutants: The proposed listing methodology would apply a decision rule for most conventional pollutants that requires greater than a 10% exceedance rate, with 90% confidence, in order to include a water on the 303(d) List. As discussed in our decision on the 2002 List, EPA accepted the state's rationale provided to support the application of this decision rule in 2002. The state cited as its rationale for this decision rule an interpretation of EPA's previous listing guidance. However, EPA's 2003 Integrated Report Guidance, Section III.H, clarifies that we do not recommend the application of a 10% exceedance threshold (particularly within the context of a binomial statistical test) unless the 10% rule is specifically consistent with the state water quality standards (e.g., for a standard expressed as a 90<sup>th</sup> percentile value).

In order to continue applying this decision rule for the 2004 303(d) List, the state would have to provide a new rationale that demonstrates how the methodology is consistent with applicable water quality

standards. Our preliminary review of the draft report indicates that several waters appear to exceed water quality standards in greater than 10% of available samples and would therefore appear to meet federal listing requirements for dissolved oxygen and/or pH, including Granite Basin Lake, Granite Creek, Bear Canyon Lake, Apache Lake, and Chaparral Lake.

**Response 65:** The 10% exceedance rate at a 90% confidence level listing methodology for conventionals is established in Arizona's Impaired Water Identification Rule, and the rationale has been established in ADEQ's 2002 Technical Support Document. A "new rationale" is not an option at this point. As EPA has stated, this rationale was accepted in 2002. EPA's 2003 Integrated Report Guidance was not provided to state agencies until July of this year, when data assessment was nearly complete. EPA should understand that state law must always take precedence over any guidance. ADEQ would also like to point out that EPA has not issued its listing guidance in the form of a required federal regulation. The Department believes that use of guidance allows states some flexibility in tailoring their listing methodologies to their own unique water quality standards, monitoring programs, and hydrologic conditions, provided that sufficient rationale is given. However, as stated in "Responses 62 and 63," ADEQ will make note in the report those waters that EPA is likely to list.

**Comment 66:** Turbidity and Suspended Sediment: The state proposes to create a new subcategory 4D to include waters that the state characterizes as impaired due to turbidity but are not included on the 303(d) List due to the repeal of the numeric turbidity standards. The state is required to consider for listing under 303(d) waters for which turbidity data and information demonstrate exceedances of any numeric or narrative water quality standards. The narrative water quality standards for bottom deposits or toxic effects may be applicable to turbidity and should be considered in this context. Several TMDLs developed by the Department have demonstrated close correlations between turbidity and suspended sediments. High levels of suspended sediments in streams have been associated with unacceptably high bottom deposits, which can harm aquatic habitats, and with direct adverse effects on fish health (e.g. through gill abrasion). Because the state properly considers these waters to be impaired, they should be considered for inclusion on the 303(d) List. If the state believes they should not be listed, the state should provide a more thorough discussion of how it considered the available turbidity data in its assessment (including analysis of the timing and magnitude of turbidity levels).

We understand that the Department is reluctant to apply the new suspended sediment concentration (SSC) standards because of the difficulty in interpreting baseflow conditions. We expect the Department to consider available information concerning stream flows and to apply the SSC standard in the listing assessments. We suggest that baseflow includes "natural and human induced streamflows" (USGS website definition). As you know, we have analyzed several streams' flow records and will be in touch to discuss potential methods for characterizing base flow for purposes of applying the SSC standards.

**Response 66:** ADEQ disagrees that TMDLs developed by the Department have shown close correlation between turbidity and suspended sediments; in fact, these reports showed a very weak correlation in Arizona. Additionally, as EPA acknowledges in "Comment 62," ADEQ cannot make a 303(d) listing based on a narrative standard violation until implementation procedures have been established. The state therefore

cannot include on the 303(d) List those waters with turbidity exceedances, due to the repeal of the turbidity standard and the lack of narrative standard implementation procedures.

Upon further consideration, ADEQ has removed Category 4D. Any waters that would have been impaired or inconclusive under the repealed standard have all been assessed as inconclusive and placed on the Planning List for further study. ADEQ has made note in the report those waters that EPA may add to the 303(d) List based on turbidity exceedances.

ADEQ has developed a method for determining base flow and assessing SSC data since release of the first draft. Waters with SSC data and sufficient flow data have been assessed in the second draft and placed in the appropriate category.

**Comment 67: Natural Source Exemptions:** We note that the state proposes not to list E. Verde River based on the natural sources exclusion. Please provide detailed documentation that demonstrates that any water quality standards excursions in this water are due solely to naturally occurring sources.

**Response 67:** The East Verde River receives water diverted from East Clear Creek in order to maintain flow in this area. Historically, arsenic exceedances have been detected only when this inter-basin transfer is not occurring, during which times the primary water source is ground water upwelling. Studies have shown that high levels of arsenic in this area can be attributed to the "Verde formation," an arsenic-rich alluvial deposit. Data show that arsenic concentrations increase as streams pass through this formation. Well and spring water originating from the formation also have elevated arsenic levels (*Sources and fate of arsenic in the Verde and Salt Rivers, Arizona*, Baker et. al., 1994). These studies are available for further review by EPA.

**Comment 68: Consideration of All Existing and Readily Available Data and Information:** Federal regulations require the state to "assemble and evaluate all existing and readily available water quality-related data and information" to develop its 303(d) list (40 CFR 130.7(b)(5)). This broad mandate addresses data and information types in addition to water column data, including (but not limited to) aquatic sediment data, tissue data, biological data, toxicity data, physical integrity data, and data and information concerning fish kills or other water quality problems. It appears that the state focused its water quality assessments solely on water column data, and it is unclear whether the state actually assembled and evaluated all existing and readily available water quality-related data and information for the 2002 assessment.

We understand the state's view that the IWR precludes assessment of narrative standards exceedances absent adopted implementation provisions; however, the state is still required to assemble and evaluate other water quality-related data and information. The final Report or supporting documentation should demonstrate that the state has met this data and information requirement. We note that the IWR provides ADEQ with the discretion to use data, which does not meet every QA/QC requirement if the data are generally reliable. To the extent the state did not actually apply any water quality-related data and information, which it obtained in its assessment effort, we expect the state to submit a description of the data or information along with a rationale

for the decision not to apply it in the analysis. As discussed above, EPA may need to reevaluate these data and information sources in our review of the state's final listing decisions.

If the state did not assemble all available data and information, we request that you identify available data and information sources which ADEQ did not obtain to assist us in obtaining and evaluating them. As we discussed with your staff, we would appreciate the opportunity to understand whether there are available data and information sources the state did not consider as soon as possible, so that EPA can begin working with you to assemble and evaluate these sources.

We expect the Department to assemble and evaluate any data or information sources identified by commenters on the 2002 list that were not provided or which became available following the cutoff of new data and information for that listing cycle, and to consider these additional data and information sources for the 2004 listing cycle.

**Response 68:** ADEQ reviewed and included data and information related to fish tissue analysis, fish consumption advisories, and fish kills. All waters where a fish consumption advisory is in effect, or where a fish kill occurred (unless due to drought or stocking of inappropriate species) were placed on the Planning List until narrative implementation procedures are established, in accordance with the Impaired Water Identification rule. ADEQ could not evaluate sediment data, biological data, toxicity data, nor physical integrity data, because no criteria have yet been developed against which data could be evaluated. As the Department requested in 2002, ADEQ again requests that EPA allow the department to continue its work in establishing these criteria. ADEQ maintains that there is no current basis for evaluation of these data by ADEQ or EPA. Furthermore, ADEQ is continuing its work on narrative implementation procedures for narrative sediment/bottom deposit standards and expects to have those procedures established in rule for the 2006 assessment.

#### **Comments Not Directly Related to the 303(d) List**

**Kristine Uhlman, NEMO (Nonpoint Source Education for Municipal Officials) Coordinator, University of Arizona**

##### ***First draft comments:***

**Comment 69:** The Report addresses surface and ground water, and although your ground water database query excluded Superfund cleanup sites, you at least mention that there are multiple sources of water quality data within ADEQ, including Superfund. Knowing that Arizona has several aquifer storage and recovery programs (artificial recharge or water banking programs), I think it might be appropriate to mention that these potential sources of water quality impact exist in the state, but are not covered within the Report. In addition, the use of recycled water is becoming more common, and in other western states has been used for ground water recharge as well as for irrigation. I expected to see at least a paragraph that addresses these 'other waters' in this Report, - perhaps the paragraph could state what waters of the State are not included.

**Response 69:** ADEQ appreciates the comment. ADEQ will consider adding information in the future about what is not covered in the report.

**Comment 70:** Pharmaceuticals in natural waterways as well as in water supply are becoming a topic of interest, especially in recycled water. It is understood that there are likely no data available and insufficient funds from which to build a database, but mention could be made that future water quality issues may include pharmaceuticals.

**Response 70:** Thank you for the comment. There are many other timely topics of interest and many other parameters that Arizona is not routinely monitoring for, or for which no water quality standards have been developed (such as MTBE and pharmaceuticals). The Department has dedicated multiple chapters in past reports to information about water quality programs, monitoring, etc. that is not included in the report. ADEQ will consider adding this information to future reports.

**Comment 71:** The discussion of TDS (Section VII-15) seemed to interchange the term salinity with TDS – it is my understanding that although salinity correlates with TDS, the correlation is on a site-specific basis and not necessarily one to one. Salinity is defined by TDS concentration, but not all TDS is composed of the same cations/anions, and irrigation salinity is different from geochemical salinity. Is the data from the Salt River Project reported as salinity or TDS?

**Response 71:** The commenter is correct that salinity is defined by TDS and the terms are not necessarily interchangeable. ADEQ has added clarification within the report (Chapter VII). The Salt River Project reports salinity as measured by TDS.

**Norbert Kocman, Sierra Vista resident**

***Second draft comments:***

**Comment 72:** I am told the quantity of water available in the Upper San Pedro Aquifer is sufficient for hundreds of years. I believe that premise was based on statistics available prior to the building boom which we are now experiencing. However, documentation now shows not only the lowering of the water table in wells but of some major cones of depression that has occurred in the last several years. (Quotes from ADWR and ADEQ on pumping rates included.) Doesn't this in itself harbor dire forecasts of the future if (a) the drought we are now in continues and (b) the growth rate of the area, primarily Sierra Vista, continues as it has for years to come?

**Response 72:** The comment is outside the scope of this report, which addresses water quality, but not quantity. Concerns regarding water quantity may be addressed to the Arizona Department of Water Resources.

**Comment 73:** I am also concerned about the "quality" of the water supply from the Upper San Pedro Aquifer. Case in point was the article in the Arizona Star on Saturday, February 21, 2004 about contamination of the San Pedro River and Aquifer by the mining operations in Cananea, Mexico. "The contamination in Sonora (Mexico) is worse than at any time of its (the mining operation) history. This contamination, due to the acids, kerosene, and other solvents that are managed by the company, affects the towns of Hereford, Sierra Vista and other towns. These chemicals are thrown into the river and the aquifer." I doubt seriously this practice helps the aquifer.

**Response 73:** Surface and ground water quality in the San Pedro watershed, as well as water quality throughout the state, is monitored by ADEQ on a regular basis through its Ambient Surface Water Monitoring Program, Ambient Ground Water Program, Source Water Assessment Program, and Water Quality Compliance Program. These groups are working to identify and resolve water quality problems such as the ones described. There are four reaches of the San Pedro River on the draft 2004 303(d) List of impaired waters (for copper, *Escherichia coli*, nitrate, and selenium). These stream reaches have been scheduled for development of a Total Maximum Daily Load analysis, which will identify sources and recommend actions to resolve the problems.

**Comment 74:** Not only the Mexicans are polluting the Aquifer, but also the very people dependent upon it, unbeknownst to them, for pure, fresh, clean water. In the Report published in the Environmental Science and Technology/Vol. 36, 2002 titled "Pharmaceuticals, Hormones and Other Organic Wastewater Contaminants in U.S. Streams, 1999-2000: A National Reconnaissance" it states "...Household chemicals, pharmaceuticals and other consumables as well as biogenic hormones are released directly to the environment after passing through wastewater treatment processes (via wastewater treatment plants or domestic septic systems), which often are not designed to remove them from the effluent...."

I understand that there are 800 (+/-) septic systems in the City of Sierra Vista alone.... Additionally the city of Sierra Vista taunts that the effluent discharged from its waste water treatment plant is returned to the aquifer, thus mitigating some of the water deficit from pumping. One has to wonder and question, based on the above report, what impact this, effluent recharge and the huge amount of septic systems, has on the water quality being pumped today from the aquifer....

**Response 74:** Household chemicals and pharmaceuticals in wastewater and their effect on water quality are issues that the scientific community is just beginning to understand. EPA's website identifies pharmaceuticals and personal care products (PPCPs) in the environment as an "emerging environmental issue," since it has witnessed most of its development only during the last five to ten years. EPA states that much more research (laboratory and field) will be required before any decision can be made as to which individual types of PPCPs (if any) might necessitate further attention. ADEQ will keep abreast of any new developments in this area.

**Comment 75:** Your work in this field is probably one of the most important and least recognized that is being done today. As you can appreciate water is an extremely precious commodity, is least recognized (taken for granted) and is one of the most important things in life. Without it, or without a clean source, mankind will cease to exist.

**Response 75:** ADEQ appreciates the comment.

Nancy Kroening, Green Valley resident

*First-draft comments:*

**Comment 76:** I do not need to read the report to know that something is very wrong with water management in Arizona. The streams and rivers have hardly any water in them! We birders go to sewage treatment ponds to see birds! These are often the best places to go to chalk up a number of species. And, it isn't just the drought. This is normal. Pumping depletes the water that should flow to the riparian zones. In a desert with no water in the streams, development is proceeding unchecked. There are no provisions to assure water for wildlife – just people. This is so wrong! We all want the living systems to thrive, not be bone dead everywhere. I recommend new legislation to ensure water for wildlife first!

The Central Arizona Project is so risky. 25 million people could suddenly be almost out of water! What are we thinking of? What are the contingency plans?

**Response 76:** The comment is outside the scope of this report, which addresses water quality, but not quantity. Concerns regarding water quantity may be addressed to the Arizona Department of Water Resources.

**Comment 77:** We have yellow water (sulphur compounds) with high salt content and arsenic from the mines delivered to our home. By law, we should have good water, not mine-polluted water.

**Response 77:** The comment is outside the scope of this report, which addresses ambient surface water quality, not drinking water quality. Concerns regarding public drinking water supplies should be addressed to ADEQ's Compliance Assurance Unit, in the Water Quality Compliance Section.

**Al Simonetti, White Hills resident**

*Second draft comment:*

**Comment 78:** Mohave County supervisors have recently given approval for a large subdivision to be put in this area. This is fine, but in my opinion there is not enough ground water to supply water. The plan calls for approximately 85,000 new residents in this high arid desert area. Current plans call for the developers to drill very deep wells to extract possibly deep underground water supply. I have heard rumors of wells of two to three thousand feet deep. In my opinion if this is done Lake Mead will be affected. As you know Lake Mead water is utilized by California and Nevada besides Arizona.

**Response 78:** The comment is outside the scope of this report, which addresses water quality, but not quantity. Concerns regarding water quantity may be addressed to the Arizona Department of Water Resources.

**Phelps Dodge Corporation**

(See also Comments 3 - 36 under "comments addressing the 303(d) List" above)

**Comment 79:** Unless the assessment of groundwater quality is included in the draft integrated 305(b)/303(d) report to preserve Arizona's right to receive grants under section 106 of the Clean Water Act, the groundwater assessment language should be removed into a separate report (which would not be submitted to EPA). Neither section 305(b) of the Clean Water Act nor 40 CFR 130 require that groundwater quality be discussed in the detail addressed in the draft report. In fact, 40 CFR 130.8(c) simply provides that states "may" address groundwater in the 305(b) report if they so choose. Because EPA does not have authority under the

Clean Water Act to regulate groundwater quality or discharges to groundwater, ADEQ should address Arizona groundwater quality in a report separate from the integrated 305(b)/303(d) report.

**Response 79:** The commenter is correct that section 106 of the Clean Water Act is the primary basis for inclusion of ground water data. ADEQ also wishes to provide a complete water quality resource for public use.

#### References

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5. **The name and address of agency personnel with whom persons may communicate regarding the public information:**

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The 2004 303(d) List may be downloaded from the Department's web site at: <http://www.adeq.state.az.us/environ/water/assessment/2004.html>. Copies of the 2004 303(d) List may also be obtained from the Department by contacting the numbers above.

6. **The time during which the agency will accept written comments and time and place where oral comments may be made:**

Written comments will be accepted until July 27, 2004, which is 45 days commencing from the date of publication in the *Arizona Administrative Register*. No oral proceedings are scheduled.

"Publication of the 303(d) List in the *Arizona Administrative Register* is an appealable agency action pursuant to Title 41, Chapter 6, Article 10 that may be appealed by any party that submitted written comments on the draft list. If the Department receives a notice of appeal of a listing under A.R.S. § 41-1092(B) within 45 days of the publication of the list in the *Arizona Administrative Register*, the Department shall not include the challenged listing in its initial submission to the regional administrator. The Department may subsequently submit the challenged listing to the regional administrator if the listing is upheld in the Director's final administrative decision under A.R.S. § 41-1092.08, or if the challenge to the listing is withdrawn before a final administrative decision." (A.R.S. § 49-232(A))